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A JOURNEY IN THE SALWEEN AND TSANGPO BASINS, SOUTH-EASTERN TIBET

RONALD KAULBACK

Evening Meeting of the Society, 5 April 1937

THIS journey, on which I had the good fortune to be accompanied by Mr. N. J. F. Hanbury-Tracy, occupied twenty months from railhead to railhead, eighteen of which we spent in south-eastern Tibet. When we left England, our main objects were five in number, and of these the first four will be made clear by a glance at the map. They were as follows:

To explore as much as we could of the Salween–Tsangpo Divide, in order to determine whether this was one range, running roughly north-west–south-east; or whether the Salween, instead of flowing parallel to such a chain of mountains, cut perpendicularly across a series of ranges. In this latter event the river would flow in a succession of gorges; although the converse—that if the gorges existed, it must therefore be flowing at right-angles to the lines of the mountains—does not necessarily follow.

To explore the watershed lying between the Ngagong Chu, the headwaters of the Rongtö Chu, and the Chindru Chu; and the continuation of this range to the south-east, in order to satisfy ourselves whether or not it were part of a possible continuation of the great Himalaya range.

To survey the course of the Salween from Shopando to the source (or as near the source as might be), together with any of the main tributaries that could be undertaken in the time at our disposal.

To trace the course of the Ngagong Chu from its headwaters as far down as Shöwa, below which this work had been done by Captains Morshead and Bailey in 1913.

To collect insects, plants, reptiles, small birds, and mammals for the British Museum of Natural History.

In south-eastern Tibet the chief obstacle to travel is scarcity of transport, and because of this we kept our party down to a minimum, both in personnel and baggage. The three men we took with us are sufficiently well known to need very little description.

As sirdar we had Lewa, a Sherpa, who had been on most of the big

Himalayan peaks, including Everest, Kangchenjunga, and Nanga Parbat, and who climbed Kamet with Smythe. He is an ideal servant, with great strength of character, honest, and very faithful, and the fact that he has lost all ten of his toes through frost-bite does not prevent him from doing the work of three ordinary men, or from climbing amazingly fast. Nyima Töndrup, who was odd-job man, is a Tibetan, and, though not very intelligent, more than makes up for this lack of brainpower by his extreme loyalty. He has been Lewa's constant companion for some years, and is a most lovable personality. Finally, as cook we had another Sherpa called Nyima Dorje, who has been on Everest, Kamet, and Nanga Parbat; but he, though he started off well, is more fitted for a short than a long journey. After nine months he became irritable and dissatisfied, and he left us of his own accord in January of 1936. It was largely owing to the reliability and devotion of Lewa and Nyima Töndrup that we were able to carry out as much of our original plan as we did; and in this connection our deepest thanks are due to the Himalayan Club (and especially to Mrs. H. P. V. Townend, the Hon. Secretary of the Eastern Branch), who engaged them for us.

We went into Tibet through Upper Burma and over the Diphuk La by a route which has been described at least twice in recent years. At Myitkyina, the railhead, we were given a superb time for a week by Mr. J. K. Stanford, the Deputy Commissioner, and Mrs. Stanford; and then, on 11 April 1935, we left for the north on foot with sixty-five loads of baggage. On our way through Burma we had no work to do, apart from collecting, but the zoology of the country north of Fort Hertz has been very little touched by any one apart from Lord Cranbrook, so that any collection from that district, however small, was bound to be of value. In our case it was the reptiles which were of the greatest interest, for although we came across only one new species, a lizard (*Japalura kaulbacki*), most of the others were rare.

On May 20, forty days after leaving Myitkyina, we reached Lungphuk, the last camp on the Burma side of the frontier, and there we were held up for a little, owing to snow on the pass. The Diphuk La is only 14,280 feet high, but the snow lies on it until about the middle of June, and our coolies (who belonged to a Khanung clan called Talang) had few clothes and no footgear. We waited until May 26 to cross the pass, and even then there were still 4 feet of soft snow on the steep north slope; and although the porters were not actually frost-bitten, they all complained of very sore feet the next morning. The Talangs took us the seven stages from Meting, the last village in Burma, to Shikathang in south-east Tibet, and then hurried back to their jungles again without delay.

With its half-dozen ramshackle pinewood huts, Shikathang strikes one as being rather inadequate quarters for an important official and his retinue; but, being at the junction of the Rongtö and Zayul [1] rivers, it is an ideal

[1] The conventional English spelling of the Tibetan རྫ་ཡུལ་, or Dzayü, meaning the Country of the Dzaya (རྫ་ཡ་), the figured, speckled wood from which the most valuable drinking-bowls are turned. The Dzaya is the interior of a large wen, like a goitre, which grows out from the side of a tree, and which is caused by a disease of the wood. I have the spelling on the authority of the Governor of the district, and of the Abbot of the monastery of Sangachö Dzong.

centre for tax-collecting; and, apart from this, it is at less than 5000 feet, and so pleasantly warm during the winter and spring that the Governor of Zayul is generally there from January until June. An official deputation, headed by his A.D.C. (a fat, scantily-bearded monk), met us 2 miles outside the village with ponies and ceremonial scarves and escorted us in, with a great jingling of bells, to a little courtyard at the back of the Governor's house. There we pitched our tents, because accommodation in that village is never good, and when the Governor and his staff, his servants, tailor, bootmaker, silversmith, and camp-followers are all in residence, the wonder is not that there is no room for stray travellers, but that the few miserable houses can possibly contain the mass of humanity which somehow packs into them. The following day, and after the usual exchange of presents, we called on the Governor, who turned out to be an old friend of mine whom I had met in 1933, when I was with F. Kingdon Ward. He was most kind and helpful, and, largely on his account, we stayed in Shikathang for ten days before starting on the next stage of the programme.

We had begun survey work from the Diphuk La, as up till 1935 there was nothing better than a compass traverse between there and Shikathang; and we were now heading for Sangachö Dzong, *en route* for Shugden Gompa. The easterly road, up the Zayul river, had been mapped by Captain (now Colonel) Bailey in 1911, and that up the Rongtö Chu and over the Ata Kang La by A—K in 1882, and by Kingdon Ward in 1933; so the only new way left to us was *via* Lepa, a route which enabled us wholly to change the general shape of this piece of country as shown in previously existing maps. This was no surprise to us, for when I had reached Lepa in 1933 I had found that the river on which it stands, instead of flowing north as conjectured in the maps, ran due south into the Zayul river a short way above Shikathang.

We left this place on June 10, but, before going, we had to have a new rope bridge built across the river, as the old one was now very decrepit. The bridge is 70 yards long—a single rope made entirely of twisted strips of bamboo—and, even though the whole neighbourhood would benefit from it far more than ourselves, we expected a fairly heavy bill. However our finances were able to stand the strain, for the total was only 1*s* 10*d*.

Our route for the first five days lay up the Rongtö valley, where the going is very comfortable, mostly through tall pine forest, with frequent clearings and many small villages, in all of which rice is grown as well as barley and peas. After three days we reached Dri, and crossed to the left bank of the river by another rope bridge, making a very short march up to Traba.

The people here, we were told later, are notoriously obstructive, and the headman refused to provide coolies at less than double the rate which had been agreed upon in Shikathang. As that in itself was high, we felt that he was being unreasonable, and sent Lewa back to collect men and ponies from lower down the valley. The other villages on the left bank gave help willingly, but transport was scarce, and in the end we had to induce the headman of Traba to provide twenty-five men at the regular rate by threatening, if he failed, to take him with us to argue the matter out with the Governor, who was now on his way to Sangachö Dzong by the Zayul river road.

Immediately below Traba is the small village of Latsa, which is most

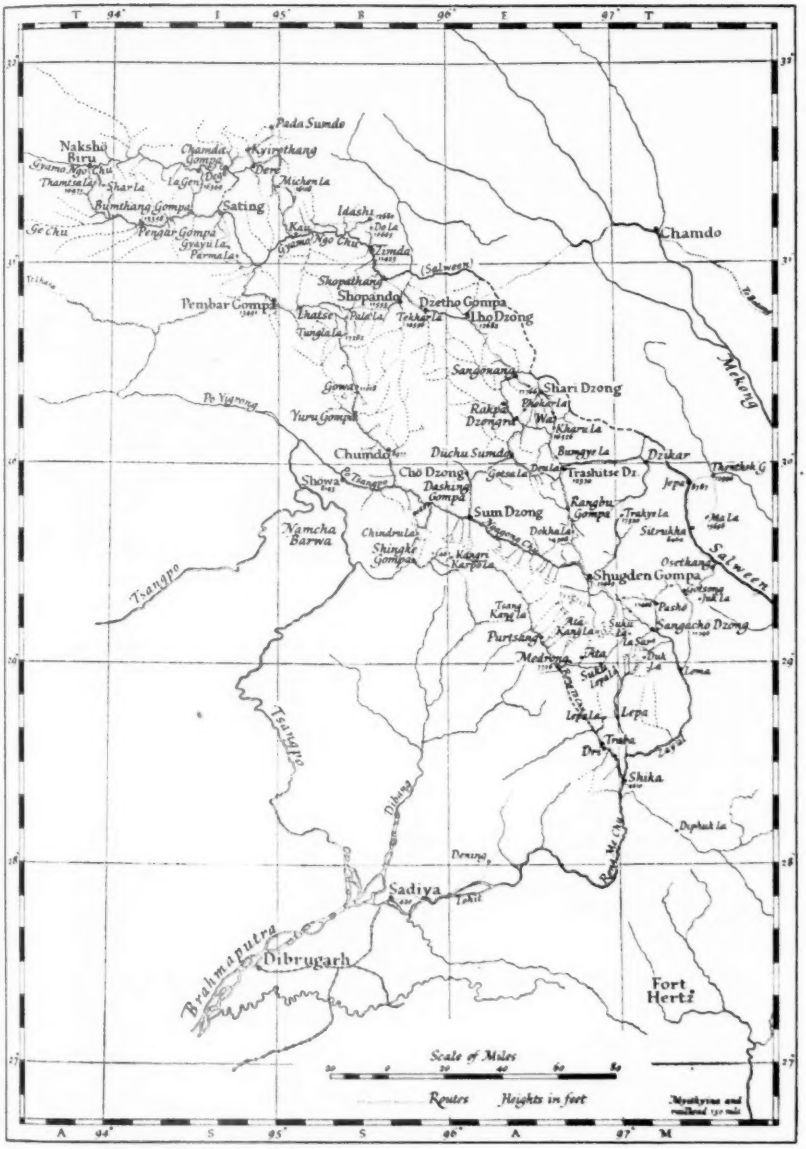
interesting in view of the fact that it is a Government grant to a private individual (a Khampa from the north of Chamdo), on account of the following state of affairs.

Except in the Sangachö Dzong district, where the people are still predominantly Khampa in type, the Zayulis, by frequent intermarriage with neighbours and slaves, have acquired a mixture of Khampa, Mishmi, Khanung, and Chinese blood, with probably some dwarf aboriginal too. Together with this deterioration in type there has been a falling off in religious matters due to continual close contact with the animism of the Mishmis and also, to some extent, with Hinduism (as seen for example by occasional cremation of the dead) from Sadiya. This problem has been in the minds of the Lhasa Government for the past sixty years at least; and so, at intervals since about 1870, well-bred and devout Khampas or Babas, who have served the authorities well in minor positions, have been given villages in the Rongtö valley *in perpetuo* and tax-free, not only in order to purify the religion, but also to import good new blood into the country. Besides the one at Latsa, there are such freeholders in Pangthang, Medrong, and Purtsang, the latter consisting entirely of free Babas who founded it in 1905 under orders from Lhasa.

On the second march above Traba we turned eastwards out of the Rongtö valley towards Lepa. The path now ran through forest in a steep, narrow valley with precipitous sides. Pouring rain made conditions difficult, and by the end of the second day, when we should have crossed the Dzogu La (13,750 feet) and camped a short way beyond it to the east, we were still some 1500 feet below it, with both coolies and ponies exhausted. It was a poor place to camp—in a rocky gully which caught the wind and which seemed to be the main drain for the melting snow from the pass—but there was no better to be had and, in any case, there were enough rhododendron bushes about to make good fires.

Owing to low clouds and the thickness of the forest, work had been difficult ever since we had left the Rongtö, but, when we crossed the Dzogu La on June 22, it became quite impossible. A heavy mist limited visibility to less than 200 yards, and there was nothing for it but to wait in Lepa, 4000 feet below the pass, until the weather cleared up enough for us to be able to go back and continue the map. We waited eleven days for this, and the one good thing about the halt was that it gave us a real opportunity to deal with some septic places Hanbury-Tracy and I still had on our feet from leech-bites in Burma.

Lepa is a village of ten houses, growing wheat and barley, and keeping many cattle and sheep. Owing to snow on the passes, it is cut off from the rest of Zayul for nearly six months in the year—from the Rongtö between the beginning of January and the middle of June, and from Sangachö Dzong between October and July. There is no path down the Lepa Chu, and few of the inhabitants ever leave their own valley, in which theirs is the only village. In the summer men come in from the Rongtö to exchange rice for butter, and from Sangachö Dzong with knives, jewellery, and salt to trade for butter and wheat, and these are almost the only contacts which are ever made with strangers, except when occasionally a girl from outside is brought in as a wife.



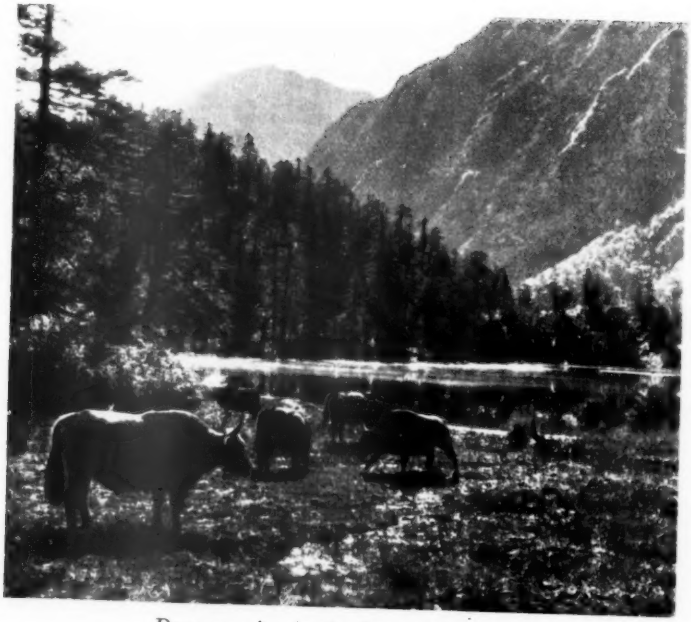
Sketch-map of the Salween and Tsangpo basins to show the routes followed by Kaulback and Hanbury-Tracy

We left Lepa on July 4 with our baggage on *dzos* (or half-bred yaks and ordinary cattle), and for the first three days were in pine forest with clumps of bamboos and, later, rhododendron scrub. We were climbing steadily however and our fourth march brought us above the tree-line (which is here in the neighbourhood of 13,000 feet) and to the foot of a large glacier, some $7\frac{1}{2}$ miles long by 2000 yards in width, flowing from a line of snow-peaks to the west. This glacier was in rapid retreat, and the surface was very smooth and with few crevasses. For $1\frac{1}{2}$ miles we scrambled along the lateral moraine of big limestone boulders before crossing the ice and climbing up to and over the Duk La (13,990 feet), but not even on the moraine did we have any difficulty in moving along. This was most unusual, and the coolies said that never before had the first caravan of the year been able to cross this stretch of moraine without spending at least one day in making a path. The whole of this district has been intensely glaciated and there are still several fair-sized hanging glaciers on both sides of the Duk La. Formerly the ice extended to about 5 miles below Lepa, but this having receded, there appears to have been a second and much more recent advance to some 6 miles above the village.

On July 7 we made camp in a small grazing ground almost within sight of the Zayul river, and the next morning, after a very steep climb of 3000 feet, we reached the top of the La Sar (14,930 feet). This pass is simply a cleft in a knife-edged ridge not 2 yards wide at the top, and equally abrupt on both sides. It was still blocked by a cornice of hard snow, which overhung for perhaps 20 feet, and without much hope we told the coolies to attack this with their knives. For more than an hour progress seemed to be negligible, and it looked as though we might be there for a week; but suddenly, and much to our surprise, the greater part of the snow fell away into the valley beyond, leaving just enough room for us to be able to lower the baggage and animals on to the path below. We reached Sangachö Dzong that evening.

Sangachö Dzong consists only of a monastery of a hundred and eight monks, and a small *dzong*, or fort, built on the crest of a ridge about 800 feet above the floor of the valley. There are six villages in the immediate neighbourhood, each of which takes it in turn to supply the monastery and fort with wood and water for three days at a time. We put up in the *dzong*, a fine new building of three storeys, built in 1927, with a magnificent view both up and down the valley. We were by no means the first Europeans to reach Sangachö Dzong, for Colonel Bailey had arrived there from the east in 1911, and Kingdon Ward from the west in 1933. We stopped there for ten days, chiefly in order to give the Governor time to turn up before we left; and during that time Hanbury-Tracy went up as far as the Sukhu La (or Podung La) on the difficult road to Sukhu, and we were fortunate in seeing the ceremony of Mönla Chenmo in the temple on July 16.

We had intended to leave for Shugden Gompa three days after that, without realizing that the day would be the 18th of the fifth Tibetan month, and a most inauspicious date to start a journey. Every one else however had realized it only too well. First of all, word was sent from the monastery begging us not to leave then on any account, as it had been foreseen that, if we did, Hanbury-



Dzos grazing in the Lepa Chu valley

Crossing a glacier south of the Duk La

Chortens at Shugden Gompa

Zayul Ngü Chu valley near the Kangri Karpo La

Tracy, I, and three others would be struck down with some disease on the way. We thanked the emissaries and had actually decided to put off our departure for a day when, to make quite certain, an invitation arrived from the Governor to say that he hoped it would be convenient for us to dine with him on the 19th, and that he had already had a *dzo* killed for the purpose; and the two headmen in charge of transport came in, with a ceremonial scarf, imploring us to forgive them because they would not be able to obtain enough baggage-animals in time, and would need one more day. Altogether we would not have stood very much chance of leaving on the original date even if we had still wanted to do so.

From Sangachö Dzong to Shugden Gompa we followed the route over the Dzo La (15,830 feet), which had been mapped by Colonel Bailey and by Kingdon Ward. It is two long marches to Shugden Gompa, 12,990 feet up, on the very deeply eroded south-west slope of the Salween–Tsangpo Divide. Shugden Gompa is in the district of Ngagong, which takes its name from the guardian spirit of a remarkable sugar-loaf limestone peak, called Ngagong. This towers above the south-west end of the lake, and is certainly visible from the Ata Kang La and the Dzo La, and, I am told, from the Dokha La as well. A group of five high peaks to the west of the lake, of which Ngagong is one, are together called Dorjetsenga, the Five-peak-thunderbolt, and are regarded with great veneration.

In order to carry out our second aim and explore the range south of the Ngagong Chu, we had to separate at Shugden Gompa. We decided that Hanbury-Tracy should take Nyima Töndrup and go down the Ngagong Chu itself as far as Dashing, doing as much work north of the river as he could manage in four or five weeks; while I was to go round *via* the Ata Kang La, Medrong, Purtsang, the Kangri Karpo La, Shingke Gompa, and the Chindru La to join him again at Dashing. By dividing forces like that we would gain a fair knowledge of both sides of the range and would cover two new routes of considerable geographical importance. We felt that there might be some difficulty in arranging for transport to cross the Kangri Karpo La, and so Hanbury-Tracy took the bulk of the baggage with him—very fortunately, as it turned out.

Hanbury-Tracy left Shugden Gompa on July 24, and three days later I started myself for the Ata Kang La with Lewa, Nyima Dorje, and a dog called Balu. The latter had adopted us of his own free will, and was a most faithful companion for the next three and a half months. He was then stolen by some dog-fancier in the Salween valley and passed out of our lives.

The Ata Kang La is a large glacier saddle at 15,110 feet, open from July till the end of October. The ice flows north from two high peaks on to the pass and there divides into three glaciers, the largest of which runs east into the Sukhu Valley, being joined on its way by several others from the north. The second (short but wide) flows for $2\frac{1}{4}$ miles towards Shugden Gompa; and the third (little more than a quarter of a mile in width) for 3 miles to the west. The path follows the latter. The ice north of the pass gave remarkably smooth, easy going, but near the Ata Kang La itself there was still between 1 and 2 feet of snow hiding several narrow crevasses, so that we had to walk

with care. We crossed the pass in bright sunshine, but hardly had we turned down the westernmost glacier than a thick mist swept up and blotted everything out for minutes at a time. The ice here was so much broken up that it was almost impossible to move except during those short periods when the mist lifted enough to let us see where we were, and it took us nearly an hour to cover about 400 yards. We were all heartily glad to reach solid rock again.

In 1933 we had camped for a fortnight at Chutung (a small shelf a little way below the Cheti La), but when we arrived there on July 28 we found that all available room had been taken up by a large band of pilgrims on their way to Shugden Gompa for Mönla Chenmo. (This ceremony takes place regularly once a year in each monastery, but not necessarily on the same day, or even in the same month in any two places.) The hut which Kingdon Ward had had built in 1933 was still in partial existence as a roof and four corner posts, but the rest of it had been used as firewood. Chutung being so crowded, we descended another 1500 feet to the bank of a small glacier torrent and made camp there. The next day we reached Ata, where we remained until August 1.

From Ata we went up past Sukhu (which I had visited two years before), to within sight of the Sukhu La, so as to finish the route which Hanbury-Tracy had surveyed as far as the pass from Sangachö Dzong; and we then turned west past Medrong and through the Ata Chu Gorge to the confluence of the Ata Chu with the Rongtö Chu. North of this confluence the Rongtö Chu is called the Zayul Ngü [1] Chu, and is composed very largely of glacier water. Kingdon Ward had gone up it for the first five marches above Purtsang in the autumn of 1933, but had then been forced to turn back on account of bad weather.

Purtsang, a village of twenty-one houses, is the last one in the Zayul Ngü Chu valley, and, as has been said, is a freehold settlement of Babas. The inhabitants, many of whom are comparatively wealthy traders, pay no taxes, but are responsible for the upkeep of Drowa Gompa, a small monastery 1 mile to the north, which was founded by monks from Drowa Gompa in the Zayul river valley. This monastery above Purtsang is still unfinished, and although the temple doorway and the wall paintings are most excellently done, the figures inside are still of plain clay.

From Purtsang there is a route into the Dri valley over the Tsang Kang La, a high snow-pass called Aguia by the Bebejiya Mishmis. There is great hostility between the Tibetans and these Mishmis however, and for this reason the pass is not used now, except as a hunting boundary, although musk-hunters from both sides go up to it regularly every year. The large stream shown on the Survey of India sheet No. 91 as joining the Zayul Ngü Chu from the south-west in lat. 29° 11′ N., long. 96° 31′ E. does not exist as a single stream. In its place there are three moderate-sized streams in narrow valleys, all cascading into the river, which, from Purtsang up to 1 mile below Chilongke Camp, flows in a deep gorge-like channel, making visibility very limited unless one climbs high up the side of the valley.

[1] This particular form of Ngü means "sweat" and the implication, as it was explained to me, is that the river is sweated out of the glaciers, which perspire freely in the sun, like men.

When halting for a day or more in any place, we had been keeping records of the hourly barometric variation, which was a maximum between 8 a.m. and 4 p.m.—or, in other words, between the start and finish of an average march. The degree of variation naturally depended upon the district and the season, but by taking frequent observations we were able to obtain what were probably fair correction values for any stage of the journey.

The cumulative effect of not allowing for this hourly variation was very great. For example, assuming Purtsang in each case to be at 7385 feet, we worked out the height of the Kangri Karpo La both by corrected and by uncorrected readings of the barometer. By the former method the height came to 15,460 feet, while by the latter it appeared as nearly 17,800—a fantastic figure, in view of the facts that the barometer read 17·00 inches on the pass and that the tree-line was very little more than 2000 feet below it.

We waited eight days in Purtsang, owing to a shortage of men who were willing to make the difficult journey to Shingke Gompa; and in the end we had to send down the valley to recruit porters from Medrong and Rongyü to make up the twenty-two we needed. There is no regular path from Purtsang over the Kangri Karpo La, as this pass is seldom used by any but hunters or a few pilgrims; and as no one had crossed at all in 1934, when we left Purtsang on August 20 there was a lot of heavy work to be done in cutting a path through the undergrowth of brambles and 10-foot nettles. For the first six of the eleven marches to the Kangri Karpo La the forest was so dense that, with the limited time at our disposal, it was impossible to carry out any form of survey other than a compass traverse; but for the remainder the visibility at least was much better, although we were never able to cover more than 5 miles in a day, and on one occasion only $2\frac{1}{2}$.

The Zayul Ngü Chu has its main source in a large glacier rising from several high peaks on the range south of the Ngagong Chu, one of which is over 20,000 feet. The glacier appears to be in rapid retreat and is very smooth, with its foot at a height of 11,750 feet.

The pass shown as the Kangri Karpo La at rather more than 18,000 feet on the Survey of India sheet No. 91 is in reality the Andzamkho La, very occasionally used by musk-hunters between the Jairu and Chindru valleys. The Kangri Karpo La itself is 15,460 feet high, on a small glacier saddle some miles to the north. It is not a high pass, but very exposed, and the ascent from the east is steep and difficult enough to cause it to be little used. We crossed it on 31 August 1935, and dropped into the Chindru valley, which is thickly forested throughout. At the last camp above Shingke Gompa we ran into great numbers of leeches which were fully as bad as those in Upper Burma, and which are said to be found all the way down the valley from that point on.

Shingke Gompa is an attractive little monastery of twenty-one "Red Hat" monks surrounded by a large scattered village of sixty-one wooden houses. There is a strong element of Khampas and Babas among the inhabitants, almost all of whom seem to have migrated there on account of misunderstandings in their own districts. It was particularly interesting to see that every household in Shingke used heavy steatite cooking-pots, the outside of which had been turned on lathes, while the inside had apparently been dug

out by hand. These pots are made either in the Mishmi or Abor Hills, and are brought over to be exchanged for wool and salt.

We remained in Shingke for four days and then turned north towards the Chindru La, which we crossed three days later on September 11. This pass, of 14,390 feet, has a fairly easy approach from the south, but a very difficult one from the north which becomes quite impassable after even a moderate fall of snow. On this account the Chindru La is only open from June till September, and as it is on the one mule-track between Pome (the district north of the pass) and Pemakö (to the south), this tends to isolate the latter very much.

On September 12 we reached Dashing Gompa to find that Hanbury-Tracy had been waiting there since August 24, after having done a valuable piece of work in exploring the course of the Ngagong Chu and much of the country to the north of it.

The following is Mr. Hanbury-Tracy's account of his journey down the Ngagong Chu to Dashing:

"The route down the Ngagong Chu forms one of the chief communications of the province of Pome with the outside world, but although the path on the whole is good, there are several stretches of wooden galleries built out from the cliff, with the result that the route is not practicable for animal transport over the whole distance.

For the first stage of three days to the nearest village in Pome coolies had to be obtained from the neighbourhood of Shugden Gompa. On July 24 I started from Shugden Gompa with Nyima Töndrup, and for the first two days we followed the route taken by Captain Kingdon Ward in 1933, when he explored the western branch of the Ngagong lake and penetrated a short distance down the Ngagong Chu. This western branch of the lake, protected on all sides from the bleak winds of the surrounding uplands, enjoys a markedly warmer climate than the main body of the lake, and this is evidenced by the abundant growth of pine and larch along the lakeside. A mile from the lake outfall the Ngagong Chu plunges into a great gorge, 500 feet deep and 200 yards wide at its commencement, but ever increasing in depth until some 20 miles downstream the cliffs rise sheer for 3000 feet. Up the side valleys to the south of the gorge I could see signs of glacial action and at the heads of the valleys an occasional glimpse of snow-peaks forming the high range between Pome and Zayul, which unfortunately I had no time to investigate further. It is evident that the upper levels of the Ngagong Chu valley are glacier-worn, while the gorge has more recently been carved out by water.

We met several parties of traders on their way up from Shöwa and Dashing, and returning to the Rongtö valley by way of the Ata Kang La. Trade between Zayul and Pome is, comparatively speaking, brisk, but it is evidently the Zayulis who take the initiative in the matter. On the third day's march we reached a prayer-gate and stone wall, the latter once used as a defence against the Chinese in the invasion of 1910, and soon afterwards came suddenly upon the mouth of a well-wooded side valley to the south, at the head of which could be seen a fine snow-peak called Kangkarlhamo (the White Snow-Goddess) reputed, in common with many other mountains of Tibet,

to be the haunt of evil spirits. Some 2 miles up this valley we came to Migtö (12,700 feet), the first Poba village, and from there our Ngagong coolies returned home.

I had thought there might be a pass up the glacier and over a col to the east of Kangkarlhamo, leading into Zayul, but the villagers said there was none, and though I attempted to scale the ice-cliff a mile above the glacier-snout it was impracticable for any but a well-equipped ice-climbing party. There is in fact only one pass, and that a mere hunters' trail, along the whole length of the range from the Ata Kang La to the Chindru La. There were quantities of wild gooseberries in the Migtö valley, but they were terribly sour and justly unappreciated by the inhabitants. In the woods I saw a monkey, a species of macaque, while the only birds in evidence were magpies, rock-pigeons, and larks.

The Pobas of Pome have a bad reputation in the neighbouring districts, but in the last few years the Lhasa Government has made strenuous efforts to maintain law and order in this outlying province, and as a result the country is now comparatively quiet. Certainly upon first acquaintance I found the Pobas a most agreeable if somewhat lazy and haphazard people, and subsequent experience did nothing to alter this impression. The Pobas are not noticeably different in appearance from other types in eastern Tibet, but they are if anything slightly shorter in stature, and average about 5 feet 5 inches in height. In contrast with the Khampas, who usually favour a pigtail, the Pobas wear their hair long to the shoulders, and those with wavy hair, which occurs not infrequently, present something of a cavalier appearance; sharply hooked noses, with almost semitic features, are not uncommon.

I was nearly faced with the prospect of remaining at Migtö for a month, for the swollen river had swept away the bridge over the Ngagong Chu and the village headman at first declared that nothing could be done until the summer floods had subsided. But later he formed a "committee" which after two days of earnest discussion agreed that there was a possible route along and down the face of the gorge by which the broken bridge could be circumvented: with the aid of forty men standing on ledges, who lowered the loads one to the other, the task was eventually accomplished, and we continued down the gorge.

The Pobas are more than usually prone to the exasperating custom, hallowed by tradition, of cutting up a day's march into several stages at each of which a lengthy wait for fresh coolies is entailed, and as a result our progress during the next few days was slow. One village actually held the portage rights over a length of only 500 yards of the highway.

On August 5 we reached Sum Dzong, a square-walled town with a guard-house at each corner. Within are the *dzong* and the *gompa* and dwellings for a hundred monks. The Chinese invasion had left bitter memories here, for Sum Dzong was then razed to the ground, and the aged abbot recalled with regret the once splendid *gompa* which was destroyed. Sum Dzong stands at the confluence of the Chö Dzong Chu with the main Ngagong Chu; and two days' march up the former valley, I was told, lay Chö Dzong, the headquarters of the *Dzongpön* of this part of Pome. From Chö Dzong a path was said to lead over the Gotsa La to Ngagong and Shugden Gompa.

To Chö Dzong I decided to proceed, and on August 8 we started from Sum Dzong, heading almost due north up a wide, level valley in which patches of woodland alternated with open grazing ground. Tributary glaciers from the mountains to the west once stretched far down to the valley of the Chö Dzong Chu, and in two places, at Traru and at Dorje Dzong, old lateral moraines run right across the valley. The route over the Gotsa La appears to be much favoured by traders journeying between Pemakö and the district of Pashö, or farther afield to Chamdo on the main China Road, and on our way up to Chö Dzong we passed several caravans bearing chilis and dyestuff from Pemakö, and others from Chamdo with tea. This route does in fact provide the only access to Pome from the east which is fit for animal transport.

At Chö Dzong the *Dzongpön* was carrying on a lonely and difficult task in governing the unruly Pobas. Four months previous to my visit he had been attacked in his house by a Poba rising, but had successfully defended himself single-handed. Subsequently a garrison was established at Chö Dzong.

I decided to cross the Gotsa La to Rangbu Gompa and so connect with Captain Kingdon Ward's route of 1933, when he travelled from Shugden Gompa to the Salween. The *Dzongpön* graciously provided every facility, and on August 11 we left Chö Dzong, marching east up the steep valley of the Jolo Chu. Two days later we crossed the Gotsa La at a height of 16,380 feet. I had thought we were about to cross only a rib of the main range, but it was immediately apparent that we were on the Tsangpo–Salween Divide itself, for from the farther side all streams led to the Salween. The change in the country was remarkable: to the south in Pome was a land seamed with glaciers and split by narrow wooded valleys, while to the north lay open pastureland and barren, regular hills. The divide is clearly a formidable barrier to the rains which approach from the south-west. Although the Gotsa La would seem an obvious boundary, yet for some way on the north side of the pass the people are still under the authority of Chö Dzong, for natural frontiers count for little with Tibetans.

We descended to the Dü Chu, which we crossed on the following day, and then turned south and south-east, past the mile-long Yarku Tso, which is formed by a natural dam of fallen rock at its northern end, and thence up the open valley of the Yarku Chu, an ideal grazing area for hundreds of yaks and *dzos*. On August 15 we crossed the Deu La at 16,780 feet, where outcrops of sandstone appeared in the limestone range and where *Mecanopsis Baileyi* and *Gentiana sino-ornata* flowered in profusion. Descending steeply to the valley of the Ling Chu, we arrived the next day at Rangbu Gompa, a large monastery housing a hundred monks, built on a low hill in the centre of the valley. Close by stands a small *dzong*, used as a rest-house by the magistrate from Trashitse Dzong when he goes on tour but not permanently inhabited by any official.

Returning into Pome by way of the Tsaphuk La, at the head of a side valley to the west of Rangbu Gompa, and the Yoni La, by which we recrossed the Tsangpo–Salween Divide, we reached Sum Dzong again on August 22. On the 24th we started down the main valley of the Ngagong Chu and 2 miles from Sum Dzong entered thick pine forest, the country being similar to that of the Rongtö valley in Zayul. The following day we crossed the river to

Dashing by a well-built cantilever bridge, a fine example of Poba craftsmanship, and were comfortably housed close to the monastery.

Three weeks later Kaulback arrived from Pemakö."

On 16 September 1935 I went down the Ngagong Chu three days' journey to Shöwa, in order to connect with Morshead and Bailey's work of 1913, and then returned by the same route to Dashing Gompa, to rejoin Hanbury-Tracy, who had remained there.

On my way from Purtsang to Shingke Gompa, and except in the immediate neighbourhood of the Kangri Karpo La, I had not been able to see any of the crest of the range forming the south side of the Ngagong Chu valley. Hanbury-Tracy however had been more fortunate, and could see that the range was permanent snow throughout its length from Shugden Gompa to Dashing Gompa, and apparently between 18,000 and 20,000 feet in height. Near the Chindru La and the Kangri Karpo La the rocks are of limestone and slate; round the Ata Kang La they are of granite; at Shugden Gompa limestone and slate; and the Salween–Brahmaputra watershed, which is connected with this range some miles south-east of the Trakge La, we later found to be mainly composed of limestone and slate also, with frequent outcrops of bright red sandstone. At no time did I feel justified in estimating either dip or strike, owing to the great variations in both which occurred even in comparatively small areas.

Between us Hanbury-Tracy and I had found that the Ngagong Chu runs almost in a straight line from the western end of the Ngan Tso (the lake at Shugden Gompa) to Shöwa—not cutting twice through a possible easterly extension of the Himalaya as Kingdon Ward had suggested [1]—and that the range south of this river, though high, was very narrow, varying from about 25 miles in width between Shugden Gompa and Purtsang to a minimum of about 10 miles. In spite of this narrowness it is very tempting to assume that this narrow strip of mountains is a direct prolongation of the Himalaya, bent round the north-east promontory of Assam and continuing south as the Salween–Brahmaputra, or Salween–Irrawaddy, Divide. Following Burrard's argument that the Tibetan rivers cut through the Himalaya at the point of maximum elevation,[2] this assumption is perhaps supported by the fact that south of Shöwa and west of the Sü La the level of the range appears to rise to more than 20,000 feet, facing Namcha Barwa on the other side of the Tsangpo Gorge. If this is so—that the Himalaya trend east and south from Namcha Barwa—then it would seem that the Salween–Brahmaputra watershed west of the Trakge La might be a secondary fold pushed up at the same time as the Himalaya themselves.

We left Dashing Gompa on 1 October 1935 and reached Chumdo two days later after a delay of nearly a day a few miles south of this place, where the path had been carried away by a landslide. Up till 1931 Poyü (the province containing Pome, Potö, and Pemakö) had been more or less independent under its own ruler at Shöwa. In that year however it was finally taken under the

[1] *Geogr. J.* 84 (1934) 369–97.

[2] S. G. Burrard and H. H. Hayden, 'A sketch of the geography and geology of the Himalaya mountains and Tibet.'

direct administration of the Central Tibetan Government, after three months of severe fighting, and there was still a garrison of one hundred troops in Chumdo to keep order in the district. These soldiers were said to be the pick of the Tibetan Army, and they were certainly very smart in their full-dress uniforms of canary-yellow, with scarlet collars, cuffs, and shoulder-straps and black trousers with broad yellow stripes. A number of these men had pronounced beards, and they were all from the province of Ü. Chumdo had been a Poba *dzong* before 1931, and strongly fortified with a wall and guard-towers; but these were partly destroyed in the fighting and were still in ruins when we saw them. The Governor of the present district of Potö, of which Chumdo is the capital, was a young monk from Sera Gompa. He was most helpful to us and we parted from him with some regret after a stay of a week.

We continued north from Chumdo up the valley of the Potö Chu, which is very clearly glacial in origin. About 14 miles above Chumdo we passed several hundred of what appeared to be ancient burial mounds, built on the right bank of the river and on the flat bed of the glacier. They varied from 10 feet to 60 feet in height and were mostly dome-shaped, although there were one or two in the shape of crescents, perhaps 20 yards between the horns, and several long barrows about 40 yards long by 15 yards wide. On some of the circular ones there were large stones placed at the cardinal points half-way up the sides, and many of the mounds had clumps of prayer-flags. Unfortunately we had neither the time nor the implements for excavation, but if they are burial places (and I cannot imagine what else they could be) they must certainly be pre-Tibetan. There was a battle near here in 1911 between the Chinese and the Pobas, and I had thought that these mounds might be the graves where the Chinese had buried their dead, but the local villagers denied this: the mounds had always been there, and were just earth, as any one could see.

It is nominally five days' march from Chumdo to the Tungla La, but we had to stay three days in the village of Gowa on the way up, owing to the theft of Rs.2000/–. We were fortunately able to recover everything, mainly through the efficient detective work of Lewa, even before the Governor's agents arrived to inquire into the case.

For the first four days from Chumdo the valley had been lightly forested with grass and rhododendron scrub; but on the fifth march, up to the Tungla La, the path climbed steeply over barren screes of slate and limestone, past several small hanging glaciers, and up to the pass at 17,280 feet. We were now on the Salween–Brahmaputra watershed, and the contrast in the scenery on both sides was quite extraordinary. To the south there was line upon line of snowy peaks; deep, forested valleys; ravines, gorges, and torrents. To the north hardly a sign of snow, but a great expanse of gently rounded hills stretching into the distance—the whole country dry and brown, with only a few scrubby thorn bushes and an occasional stunted fir-tree to be seen. Two days after crossing this pass we reached the Gya Lam (the great road running from Lhasa to Batang, and so to Peiping) and turned eastwards along this to Shopando, where we arrived on October 21.

Shopando had been visited in 1882 by A—K. on his way back to Lhasa, and in 1923 by Pereira, so that it was already a well-known place by the time we

A Chulikata Mishmi

Zayuli coolie

Chulikata Mishmi girl

Yuru Gompa, in the Potö Chu valley

Towards the Salween from the Do La

reached it. A—K. had reported a hundred houses there, but there are now a hundred and twenty, not including quarters for the sixty-odd monks in the monastery. This however does not imply an increase of 20 per cent. in the population. The extra houses were built by the Chinese in 1910 as quarters for their troops, and the population of Shopando has apparently not changed noticeably one way or the other within the memory of any one now living. We put up in the caravanserai, a building of three storeys built round a large courtyard, and remained there for nine days. During this time we took a series of observations which showed that the position given to Shopando on the Survey of India sheet No. 82 was 13 miles too far to the east.

On October 31 we crossed the Chungke La, a low pass of 12,730 feet, into the Salween valley, and camped on the right bank of the river, 14 miles from Shopando. The Salween was here some 75 yards wide, flowing at 6 or 7 knots, and very deep. We crossed over to the left bank the next day by a primitive raft-ferry and followed up the valley to Zimda.

It was now our plan to continue westwards as far as the source of the Salween, keeping close to the river the whole way; and this worked fairly well on the whole, although twice we had to make lengthy detours for lack of any other path. The first of these was from Zimda itself, and as every one there assured us that there was no route at all along the Salween anywhere west of that place, we left for Idashi feeling rather depressed, even though on the face of it the story seemed fantastic. At Idashi however we were told exactly the reverse and were able to return to the river and travel up the valley as far as Kau over a good mule-track.

In this part of the Salween valley, and as far west as we were able to go, there are many monasteries of from fifty to three hundred monks or so, and as a result of this the ban on hunting is even more strictly enforced than in other parts of Tibet, so that game is plentiful and very tame. We saw numbers of *Ovis ammon humei* and musk deer, and the tracks of goral and snow-wolf; and, as regards birds, many hundreds of the big white pheasants (*Crossoptilon crossoptilon*) in coveys of from fifteen to sixty or seventy, blood pheasants (*Ithagenes geoffroyi*), partridges (*Perdix hodgsonii*, *Tetraophasis szechenyii*, and *Lerwa lerwa*); and, in early spring, many ducks, geese, and snipe, either nesting or on their way to the breeding grounds farther north. In this connection I was informed that there is a lake in the neighbourhood of Nakchu Dzong where many thousands of these ducks and geese breed every year.

It was now early November, and we were living at between 12,000 and 14,000 feet. At this height the crops do not ripen until late in October, and the villagers were all hard at work threshing, helped by many of the monks from the neighbouring monasteries. The straw was carefully stacked on racks in the fields out of reach of the yaks and ponies, for use as fodder between December and April when there is no grazing. Thus the prosperity of the community depends wholly on the corn crop. In 1934 for example the crops had largely failed owing to drought, and that winter, not only was there not enough grain for the people, but no fodder for the cattle, so that very many of the latter died before the grass came again in the spring. In 1935 however

the crops were excellent, which was fortunate not only for the natives but for us. Had they failed again we should probably have been credited with having blighted them by casting the evil eye.

From Kau there were two possible paths, one of which ran straight up the Salween to Dege. This was said to be difficult and seldom used. The other, which leads north, away from the river, is the main route, joining the road from Chamdo to Sok Gompa at Pada Sumdo. This latter road had been explored by Bower, Rockhill, and Bonvallot, and we therefore decided to go up to Pada Sumdo to connect with their work before returning to the Salween at Dege and continuing up the river from there.

Accordingly, from November 18, we deserted the Salween for a while, and headed north up a narrow, grassy valley, used during the summer as a grazing ground for yaks. Effective daylight was now getting short, and we began to find that we were not able to do any open-air survey work before 8.30 in the morning, or after 3.30 in the afternoon; so that, until well on in the spring, unless the march was a particularly short one, we always had to spend two days over it, with consequent enormous waste of time.

Three days after leaving Kau, and after a long ride of 19 miles over a bitterly cold pass (Michen La, 16,110 feet), we came to Rukyithang, a small and entirely pastoral village at 13,500 feet. I mention Rukyithang for two reasons only. One, that we there saw the only raven of the whole journey—a great big fellow with an indescribable air of wary truculence; and the other that Hanbury-Tracy was severely poisoned by fumes from the yak-dung fire in our tiny room there. The symptoms were like acute asthma, with considerable pain in the chest. I escaped this, possibly because I had been eating garlic sandwiches for the last few days, and raw garlic is said to be a sure preventative of such poisoning.

Since we had left Shopando the rocks had all been of slate and limestone, but on the last day's march to Pada Sumdo, which we reached on November 29, there were several outcrops of strawberry-red sandstone, apparently identical with that which we found in the Salween valley between Chamda Gompa and Nakshö Biru, and in the Ling Chu valley below Trashitse Dzong.

Before the days of portable and efficient wireless sets travellers on east–west routes always had great difficulty over their longitudes. We had found that Shopando on the China Road had been placed too far to the east, and we were particularly interested in reaching Pada Sumdo to see whether its position also needed revision. We found that it had been estimated at 8 miles too far to the west, and were able to bring this Chamdo–Sok Gompa road into correct alignment with the Gya Lam. As soon as we had reached Pada Sumdo we turned south-west again to Dege, above the left bank of the Salween, where we arrived in a blinding snow-storm on December 2. The next day, although the snow had stopped falling, a high wind was whipping it off the ground in such quantities that visibility was practically nil, and we remained where we were until the 4th, for conditions to improve. The river was already frozen over in parts thickly enough to carry transport, and just above Dege we crossed over the ice and continued up the right bank for 14 miles to Chamda Gompa at 12,600 feet. This is a monastery of a hundred and twenty monks and a village of ninety houses surrounded by a wall, but it is a bleak spot and there

Bumthang Gompa

Pengar Gompa

The Ge Chu valley above Pengar Gompa

The big chorten, Nakshö Biru

Bridge over the Salween, Nakshö Biru

is little to recommend in it. From Shopando on we had constantly been informed that the Salween divided into two streams somewhere to the west. By making the Kau–Pada Sumdo–Dege detour we had missed the confluence of these two branches of the river, and so from Chamda Gompa we turned south, crossed the La Gen (16,200 feet), and went down to this big tributary (the Ge Chu) to make quite certain that it was not the main stream, and in any case to explore as much of its course as possible.

When we reached Bumthang Gompa (12,480 feet) we found that there was no doubt as to the Ge Chu being a tributary of the Salween and not the main stream, for it was not more than 12 yards wide by 6 or 7 feet deep, while at Chamda Gompa the Salween was some 50 yards across and very considerably deeper. Incidentally, we were able, before the end of the journey, to clear up a certain amount of controversy regarding the proper Tibetan name of the Salween, which has been spelt by Europeans in various ways for years. The real name is Gyamo Ngo Chu,[1] or the Blue River of China, and called so with some reason, for in the winter and before it freezes over it is a very dark, clear blue, almost black. At other times of the year, like the Blue Danube, it is a dull mud colour. There can be no doubt as to this being the correct spelling, because we obtained it independently from three District Governors, one abbot, and one nobleman from Lhasa.

From Bumthang Gompa we went 15 miles down the Ge Chu to Sating, a small *dzong* just below the Salween–Ge Chu confluence; and then, returning, headed west again up the valley for two days to Pengar Gompa, a monastery of two hundred monks on one of the main roads from Lhasa to Chamdo. A good deal of trade passes this way, and there is a large caravanserai, of which we occupied the entire upper floor. We arrived there on December 20, and were so comfortable that we decided to remain until after Christmas. We had been living wholly on the country for the past three months and were now on a steady diet of yak-meat (or mutton) and turnips, butter, *tsamba*, and tea. This, though monotonous, was most nourishing, and we and the servants all kept very fit indeed. For Christmas however we had saved our last bottle of rum, a tin of peas, and a plum pudding, and these, with roast mutton, made a meal we remembered for months afterwards.

Above Pengar Gompa the Ge Chu valley is very shallow and open, with only an occasional patch of stunted fir-trees, about 10 feet high, and a little grass and thorn scrub; and, both here and in the Salween valley, during the winter a bitter wind sweeps down from the west nearly all day long. As a result of this, at nearly every survey station (on an average there was one every 2 miles) we had to build a fire of yak-dung or brushwood to thaw our hands, and even so they became numb after a very few minutes' work. The rule was ten minutes of thaw to five of work, and this, with the shortage of daylight, made travel extremely slow. At the end of December we crossed back into the Salween valley by the Thamtsa La (16,970) and reached Nakshö Biru on 1 January 1936. This important place is the capital of an extensive district, and consists of a large monastery, said to be more than five hundred years old, and a very scattered village of about a hundred houses. We called on the

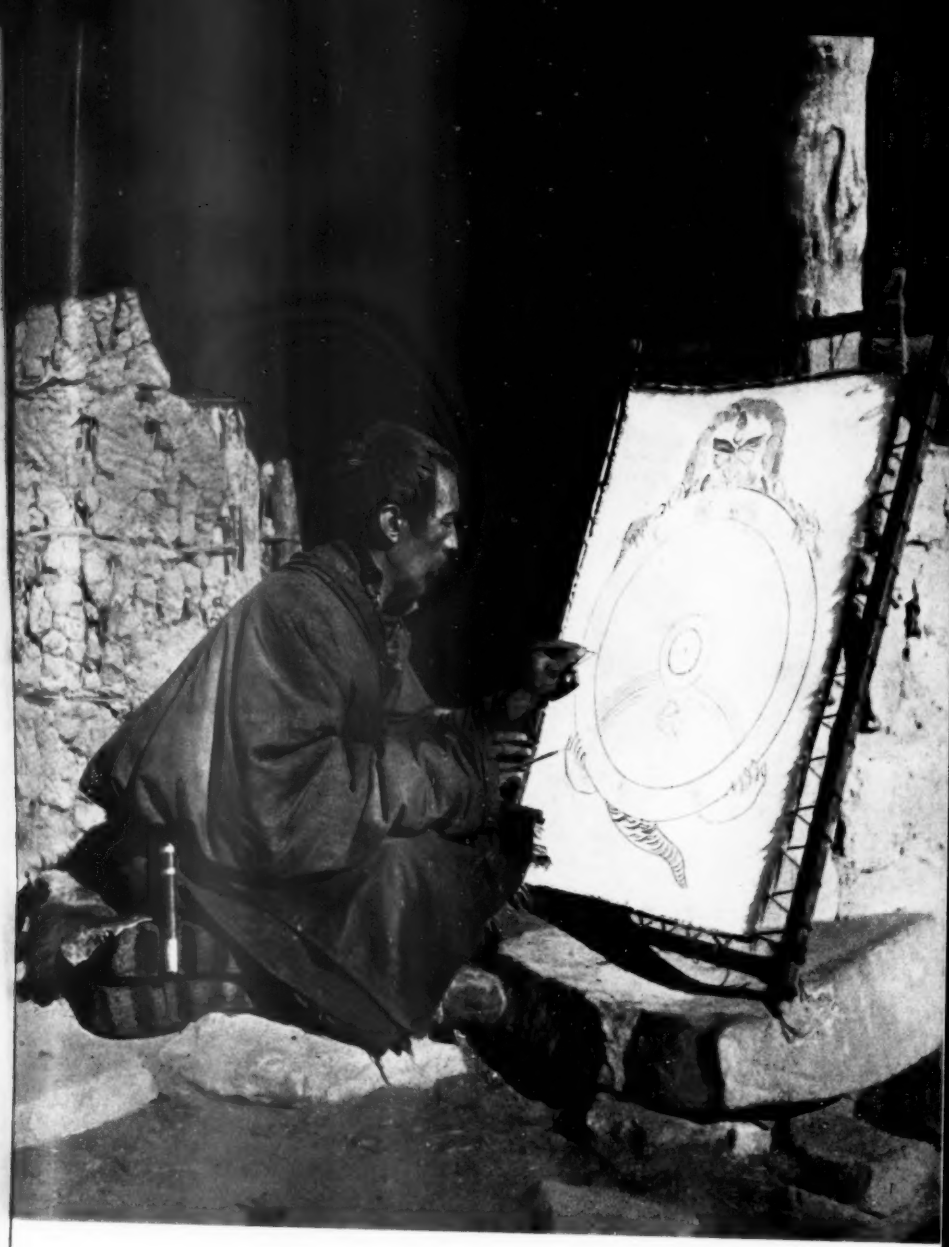
[1] རྒྱ་མོ་ངོ་ཆུ་

Governor the day after our arrival, informed him of our plans to continue up to the source of the Salween if possible, and a few days later returned down the river to Chamda Gompa, to fill in that stretch of it which we had had to leave undone while we were working in the Ge Chu valley. We arrived back in Nakshö Biru on January 22, to find that we were regarded with considerable suspicion.

Ever since leaving Burma, Hanbury-Tracy had been growing a beard, and this had apparently given rise to a rumour that we were not English but Russians, and therefore automatically spies. During our trip to Chamda Gompa and back the Governor had had time to think matters over, and he now asked us very politely if we would mind remaining in Nakshö Biru until he could receive confirmation of our respectability from Lhasa. We were not more than 300 miles from Lhasa at this time, but in this part of Tibet travel in winter is slow, and it was nearly three months before word came back that we were English and were to be given every assistance on our way. We had a house to ourselves during our long wait, and were quite comfortable, but we found it impossible to do any work. Nakshö Biru is at 13,200 feet and the air is so extremely dry that evaporation takes place very quickly. As a result of this, snow does not lie for more than a few days at a time, even in mid-winter; and, except when snow is actually on the ground, for four days out of five an intermittent dust-storm blows down the valley, driven by a high, gusty wind. We stretched a piece of cotton cloth over the window of our room to try to keep out the dust and still let in light, but so much came through that it was hopeless to bring out any maps or papers. They became quite black in a very short time. I am certain that this dust is the main (if not the only) cause of the ophthalmia which is so prevalent in this part of the Salween valley. We soon exhausted the possibilities for amusement in the immediate locality; then took up weaving, under the instruction of our landlord's wife; and were finally reduced to composing cross-word puzzles for each other to solve.

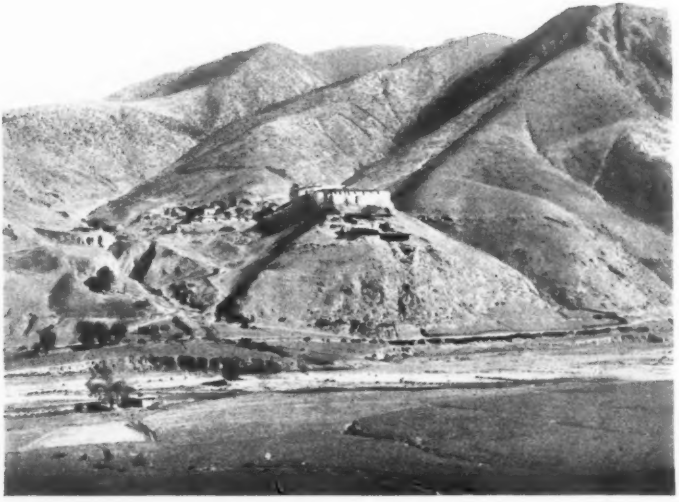
February 23 was the first day of the Fire Mouse Year, and we were invited to the monastery to watch the Devil Dance, which lasted for seven hours. Knowing hardly anything about the symbolism of the dresses or movements, we were left at the end with little more than a blurred impression of grotesquely masked figures in gorgeous robes whirling and posturing, to the constant booming of gongs and the great prayer-trumpets, the clashing of cymbals, and the squeals of clarinets. Had the performance been shorter, we might have retained a clearer memory of it after all was over.

On April 5, word came from Lhasa that we were to be allowed to leave Nakshö Biru, but by this time it had become clear that we must reserve the source of the Salween for another time. We did not make up our minds to this without some heart-burning, for it had been the main objective of the journey; but, now that spring was so far advanced, we had very little choice. We were probably a minimum of thirty marches from the source, with unknown conditions from the Amdo Tsonak on. It might easily have taken us a good deal longer. Once at the source we should have been forced either to retrace our steps for a month or more (a waste of time) or continue west and south across the plateau to Kashmir or Ladakh, as we had not sufficient



The Wheel of Life

The Gya Lam



Lho Dzong

funds left to make a detour to the north and east, and we had no permit to go in the direction of Lhasa. Unfortunately during the last few years the Changpas of the Great Plateau, who are nominally herdsmen, have taken up banditry with even more zeal than before, so that now merchants travelling north from Lhasa do so only in large, well-armed bands, of perhaps two hundred men. In the winter the Changpas are all in the north (in the lower ground) for the grazing, but in spring they start south again as the grass begins to sprout. In fact, they follow the grass as crabs do the tides. If we could only have been at the source a short time after the grass had begun to grow, we should have been across the plateau before the Changpas arrived as far down as our line of march; but as it was, with our late start, we should have met them half-way over. With only five men and no weapons we should have stood no chance, and the results of nearly two years' work would have been lost. We therefore decided to return east and concentrate on the Salween below where we had first reached it, and on the Salween–Brahmaputra watershed as far to the south as we could manage.

Accordingly, on 12 April 1936, we crossed the Salween at Nakshö Biru by a fine log bridge and returned to the Ge Chu valley. The Thamtsa La, by which we had come on our way up, was still blocked by snow, but we were able to cross the Shar La (16,380 feet), a few miles farther east, and so to go past Bumthang Gompa to Sating (12,550 feet). The Salween was now in semi-flood, and a deep milk-chocolate in colour, while the Ge Chu was running a beautiful clear green. The contrast at the confluence was very marked. From Sating we turned south, crossed three passes to the China Road, which we reached some 12 miles west of the Pembar Gompa, and continued eastwards along it to Lho Dzong. There were great numbers of professional beggars of both sexes on the road at this time. During the winter they do not travel much, but for the rest of the year they infest the main routes in Tibet. It is a religious principle with the Tibetans that beggars must be charitably treated, and though this is excellent in theory, in practice it means that there are now thousands of them who are brought up as such from birth, and who are a real burden on the community. They generally seem to be better fed, and certainly better clothed, than most of their hard-working fellows. We reached Lho Dzong (12,680) on May 8.

In the centre and west of Tibet, the word *dzong* indicates a fort built on a steep hill and overlooking a valley. In the east however *dzong* has lost this meaning and now implies only that the place is, or was, a district headquarters of some sort. Sangachö Dzong is an exception to this, although the fort there is scarcely worthy the name, and Lho Dzong is another. There the fort is a real *dzong*, strongly built on the top of a steep bluff, and only a short distance from the large walled monastery of two hundred and forty monks. We had to wait for six weeks in Lho Dzong, as the new Governor of the district was still on his way from Lhasa and his clerk, who was temporarily in charge, had no authority to provide transport for us or any one else. We took up our quarters in the village which is in the valley below the *dzong*, and spent much of our time in collecting entomological and botanical specimens from the neighbourhood.

It had been our intention to continue along the Gya Lam as far as Shabye Zampa, and then to turn south beyond the left bank, where there is an important road. As luck would have it, serious frontier skirmishing had recently broken out between the Tibetans and bodies of Chinese Communist bandits, and this fighting forced us to alter our plans. When the Governor arrived he was very pressing in asking us not to go that way, because, he said, with large numbers of troops wandering about the country we were as likely to be pillaged by them as by the Chinese, and in that case he would be severely blamed. We therefore left Lho Dzong on June 20, and turned south to Shari Dzong along the route A—K. had used in 1880 when on his way back to Lhasa. It was a delightful time to be travelling in this part of the country. Everywhere were masses of yellow kingcups and buttercups; white and dark-blue anemones; here and there patches of blue dwarf irises or big mauve primulas; white rhododendrons on 6-foot bushes, and purple ones not 15 inches high; dog-roses and sweet-smelling shrubs; butterflies; and, away to the south, the snowy mountains running down into Zayul.

Shari Dzong is only 6 miles by road from the Salween, and we had expected to have been able to go down the river from here. This too proved to be impossible, because the only path was on the opposite side of the river (here 100 yards wide and in high flood), and the rope bridge had just broken. The valley is almost bare of trees, but even if there had been enough wood to make a raft, we should not have been able to cross in that current. This was probably just as well, for it enabled us to make a fairly comprehensive survey not only of the country between Shari Dzong and the Salween–Brahmaputra watershed but also of that between Shari Dzong and Shugden Gompa, which latter we would not otherwise have done.

We left Shari Dzong therefore on July 2 and turned south-west for the Dü Chu, which we reached two days later, after crossing the difficult Phokar La, a very steep pass of 17,240 feet. The first 2000 feet down from this pass on the west side are over loose shale of slate and limestone. We left our baggage at Dzongra, on the right bank of the Dü Chu, and went down the river as far as the farthest point in its course we had been able to fix on our way to Shari Dzong. We then surveyed the upper portion of the river and the watershed to the west, and after a total of eleven days in the Dü Chu valley we crossed the Deu La (16,780 feet) and reached Trashitse Dzong (12,370) on July 15. A—K. and Kingdon Ward had both visited Trashitse Dzong on their way from Shugden Gompa, the one in 1882 and the other in 1933. We made this place our base for a time while we surveyed the route north to Shari Dzong and south to Shugden Gompa, in order to leave no avoidable blanks in our map; and finally, on August 8, we turned east down the Ling Chu valley towards the Salween again.

Kingdon Ward has called this river the Tsa Chu, but in this I think he was mistaken, and I feel that he must have inquired about it at Rangbu Gompa, for the large tributary which flows in there from the west is, in fact, called Tsa Chu. The main stream is however known as Ling Chu throughout its length. Near Rangbu Gompa there are still the remains of several lateral moraines, and the valley is clearly of glacial origin as far down as some 3 or 4

The Salween near Shari Dzong

The Ling Chu valley

The bridge at Thenthok Gompa

The Rongme Chu

miles below Trashitse Dzong. Below that it is difficult to say, but I think it is probable that glaciation extended to well below Nera Gönsar.

The Ling Chu valley is almost treeless and with little vegetation of any kind apart from thorn scrub, except immediately round the many villages. There, by intensive irrigation, the people produce good crops of wheat, barley, and peas, and there are apricot, mulberry, walnut, and pear trees. The valley seemed to be stiflingly hot, and yet the maximum shade temperature at midday nowhere exceeded 70° F. There were many lizards, a few specimens of a Chinese pit-viper, and, in the houses, great numbers of bedbugs. From below Dzikar the Ling Chu runs in a deep narrow gorge to the Salween, and the path here runs at nearly 3000 feet above the river to Po (10,900), which is itself 2300 feet above the Salween. As far as this we had been following in Kingdon Ward's footsteps from Trashitse Dzong. When we returned from Po to Dzikar I left Hanbury-Tracy there for a few days (he had strained a muscle in his thigh) and once again took Kingdon Ward's route to the south as far as the Trakge La (17,320 feet), on the Salween–Brahmaputra watershed, which is here composed of granite. I found this journey very trying (and especially the last part of the climb to the pass) owing to a severe attack of colitis, which persisted for ten or twelve days afterwards.

On August 23 we left Dzikar by the main road to the Salween (that to Po being little used), and reached Jepa after two days over a good path. The river was here about 120 yards wide, with a current of 10 knots, and the valley was very hot; and like that of the Ling Chu, except round the villages, it was almost completely barren, with very steep sides. Grapes and maize are grown in Jepa, besides other crops, and in the fruit-trees there were great numbers of emerald-green parrakeets. We crossed the river here by a rope bridge of plaited yak-hide (fifty hides to the bridge), and went up to Thenthok Gompa, a monastery which had been visited both by King and by Sir Eric Teichmann. As the crow flies, Thenthok Gompa is only about 6 miles east of the Salween, but it is on the plateau which forms the watershed between this river and the Mekong; so that while the Salween here flows at about 8600 feet, the Tsayi Chu, on which Thenthok Gompa stands, though quite a large river, is at no less than 12,900 feet.

Our intention in going up to Thenthok Gompa had been to make a short journey northwards to fill in the Salween between Shari Dzong and Jepa, but this we were asked not to do by the Governor at Tsawa Dzogang, for the same reason that had prevailed at Lho Dzong. We therefore continued south along the main Chamdo–Sangachö Dzong road, reaching Situkha on September 11, three days from Thenthok Gompa. I remained here for ten days making up arrears of work, while Hanbury-Tracy explored both banks of the Salween as far up as Jepa. The roof of the house I lived in was infested with a species of colubrine snake (*Elaphe taeniura*), reaching $4\frac{1}{2}$ feet in length, which lives on mice and small birds. I caught several, and others could often be seen peering out, or creeping about among the rafters.

On September 23 we crossed to the right bank of the Salween at Situkha by another leather rope bridge and turned south, keeping close to the river, which was now flowing in a much wider valley. As far as Wosithang we were

on King's route, but from there his path remained near the river, while we continued along the Sangachö Dzong road and climbed out of the Salween basin into that of the Brahmaputra, on September 28, by the Juk La, a low pass of only 15,400 feet. The rocks here were of limestone. We camped that night on the bank of the Chumnyö (meaning Crazy River, on account of its sudden floods) which flows into the Zayul river at Loma, and remained there for ten days on account of dense mist which hid the mountains and made survey work impossible. There was a lone cherry-tree near the camp (13,180) with brilliant red cherries growing singly and not in pairs. They were quite ripe but very bitter.

We had now, between us, crossed the Salween–Brahmaputra watershed six times (by the Gotsa La, the Yoni La, the Tungla La, the Dokha La, the Trakge La, and Juk La), and we had been able to see further stretches of it in the distance on several occasions. We had found it to be composed mainly of slate and limestone; and apart from one of 21,680 feet, north of the Drindre La, we had seen no high peaks on this watershed, the crest of which appeared to maintain a remarkably uniform level of 18,000 or 19,000 feet throughout its length almost as far south as the Juk La. Handicapped by our lack of geological knowledge, we nevertheless had no doubt that it must be one range; possibly, if Wegener's theory is correct, one of a series of nearly parallel ranges pushed up at about the same period as the Himalaya themselves.

When the weather cleared up enough for us to move again, we crossed the Drindre La (15,610 feet) and on October 10 reached Pashö, a village of nineteen houses a day's march north of Sangachö Dzong. We then went up to Shugden Gompa *via* the Dama La (15,460), this being the winter route from Sangachö Dzong when the Dzo La is closed by snow. From Shugden Gompa we went up to the Trakge La to finish that route of which I had already explored the first half from Dzikar the preceding August. We had left most of our baggage at Pashö under the care of Nyima Töndrup, and were travelling as lightly as possible; and, now that the weather was getting cold again, we found it essential to have fires in camp, not only so as to have hot food, but simply to keep warm. For this reason, on our way up to the Trakge La we had to make our last camp some 14 miles south of the pass, at a height of 14,410 feet, because farther up the valley than that there was no fuel. This meant that on October 18 we had an unpleasantly long day of 28 miles, working up to the pass and then returning to camp. Luck was with us however. We finished work on the summit of the pass with the very last of the light, and it was not until then that a blizzard broke on us from the south, blowing straight up the valley with nothing to check it. We could hardly see a yard, and became so terribly cold that it took us almost eight hours to reach camp again. Shortly before we arrived (at 1.15 a.m.) we were met by two of our coolies who had come out to look for us. They lit a large fire of brushwood to unfreeze us and gave us a meal of *tsamba* before escorting us in. Lewa had gone back to Shugden Gompa two days before this on account of a bad closed abscess in the angle of his jaw, which was causing him a great deal of pain. My instruments were all at Pashö and I did not feel capable of opening it without them. When we reached Shugden Gompa again he met us with a beaming face,

The path to the Trakge La

The Abbot of Sangachö Gompa

Khampa types from Jepa

Shödung Kharndempa: Governor of Zayul

completely restored to health. He said he had been driven to desperation by the agony and had finally taken a knife and operated on himself from inside his mouth. The results were magnificent.

We arrived back in Pashö on October 21, and left two days later for Shikathang. When we reached Gochen we found a messenger waiting for us who had been sent up from Minkhung Dzong by Kharndempa, the Governor of Zayul, with a present of 60 lb. of butter, 60 lb. of rice, and 60 lb. of excellent flour, and a letter authorizing us to take coolies through from Shikathang to Dening, in Assam. This was more than kind of him, and his letter was as welcome as his present. We had been afraid that possibly, in his absence, there might be some difficulty in procuring transport.

From Gochen, to vary the route back, we turned down the valley of the Zayul river (called indiscriminately Lhochü Ghu, Lhongpa Chu, or Chosen Chu), which had been explored by Colonel Bailey in 1911. This river flows in a deep, narrow valley with steep sides, well wooded for the most part, but the path is very good and we had no difficulties of any kind. Chikong appeared to mark a distinct climatic boundary. Above this village the forests were mainly of pine, with the houses built flush, or nearly so, with the ground; while below it there were many deciduous trees and the houses became of the true Zayuli type, raised on piles 8 or 10 feet in height with balconies in front on which the threshing is done, the ground being generally too damp for this. In this connection, and as is only to be expected, in the Zayul river, Rongtö, Chindru, and Ngagong valleys (*i.e.* where there are extensive forests) the houses are wholly of wood, with the exception of Sangachö Dzong and Gochen, where both forms are found; and elsewhere in the country we covered on this journey they are built of clay and stones, or occasionally of clay and wattle.

We reached Shikathang for the second time on 1 November 1936, and put up in the Governor's house, which was of course now empty. Colonel Bailey had only been able to make a compass traverse on his way down the Zayul river, and so we continued to work as far down as Shikathang in order to correct this with our more accurate instruments. But now work was finished and we had little to do during the eighteen days we had to wait while coolies were collected from the Rongtö valley. The one event which broke the monotony was when a certain woman, remarkable more for her greed than for her intelligence, went into a room between ours and the kitchen in an attempt to take the honey from a large swarm of wild bees which had made it their quarters. The bees, obviously annoyed, stung the thief severely, but, not content with that, they then turned on us. The attack began at 8 a.m., and although we fought a spirited action for nearly two hours with swats and smoke smudges, life became insupportable and we had to leave the premises in a body. Until 5.30 p.m. it was highly dangerous to venture near the house. Then, however, the bees retired for the night and we were able to return. On the next two days we repeated our flight into the wilderness, but after that the enemy had either forgiven or forgotten, and life became normal again.

From Shikathang to Dening, with heavy loads, it is seventeen marches over a bad footpath, and during the whole of that time it was impossible to buy

supplies, apart from an occasional fowl or a few eggs. Accordingly our forty coolies had, beside our baggage, to carry all their food for the journey. We did not realize it at the time, but when we reached Assam we found that their loads must have been considerably more than 100 lb. each. This is a huge weight in the type of country we were going through, and it says a great deal for their strength and endurance that only two of them gave up, both on account of accidents.

We left Shikathang on November 20 and crossed to the right bank of the Rongme Chu by the same bridge we had used on our way up to Lepa in 1935. We kept to the right bank of the river the whole way to Sadiya after this, and the first three days (to Walong) were especially interesting to me, because in 1933, when I was with Kingdon Ward, we had used the left bank on this stretch. From Shikathang down to Walong (below which is Mishmi country) we passed many small parties of Mishmis on their way north to spend the winter in the Rongtö valley. A number of these men could speak Assamese, and all seemed very surprised to see us. At Walong there is a big grove of orange-trees bearing a great quantity of large fruit. They were falling from the trees with ripeness, but were very sour. On November 27, after remaining one day in Walong because of heavy rain, we reached Minzong (Tibetan, Jiramarnong), a camping ground at the bend of the river where the Rongme Chu swings from south to north-west. A stream flows in here from the east, with a hunter's path running up it and over into the Hkamti Long. One of my coolies had made the round trip three years before from Shikathang, over the Diphuk La and back this way, in search of *takin*, which the Tibetans call *shimna*. Down to Minzong the path had run for most of the way through forest or tall reeds, but below this place, as far down as the Delei river, there are many villages, and large areas on the sides of the valley have been completely cleared, in many cases up to 1000 feet or more above the river. The crops are mountain rice, maize, buckwheat, and at least two kinds of millet, besides opium. Below the Delei forest predominates once more. From time to time we came upon bits of the mule-track which was made in 1911–12 almost as far up as Walong, but this is now largely overgrown by jungle, and in places has been destroyed by landslides, so that few stretches are in use.

On November 30 we reached Pangam, a large village of eleven huts, where we were greeted by Jaglum, the most influential Mishmi chief in the Miju country, which extends eastwards from the Delei river to Walong. I knew him well, for in 1933 he had gone with Kingdon Ward and myself from Pangam to Shikathang. He offered to come with us to Dening, but this was unnecessary as we neither expected nor met with any difficulty on our way. However, he accompanied us for the first 2 miles the next day, and sent a retainer with a ceremonial spear for the next three, so that due honour was done us.

We arrived at Theronliang on December 4, on the right bank of the Tidding river, which marks the limit of administered territory in the Lohit valley. From Walong on we had had scarcely a drop of rain and the whole of our trip through the Mishmi Hills had been a very real pleasure, and quite without leeches, when it might so easily have been the reverse. From the Tidding

to Dening there is an excellent mule-track, so that weather was no longer of importance to us, and, as though to emphasize its forbearance during the last fortnight, no sooner did we leave Theronliang than a heavy rain-storm broke on us, soaking us to the skin in a very few minutes.

On December 6 we reached Dening, where we were very kindly met by Mr. Walker, the Assistant Political Officer, and Captain Bond, the Assistant Commandant, who drove us the remaining 47 miles to Sadiya the following day.

APPENDIX: FAUNA OBTAINED DURING THE JOURNEY

Snakes and Amphibians.—These were mostly procured in Upper Burma, and showed, as was to be expected, a distinct overlapping of Chinese and Indian types. There was a large preponderance of pit-vipers, but apart from these no poisonous snakes were obtained on this occasion. The frogs were all previously known from India. One new species of lizard was found, which has since been named *Japalura kaulbacki*.

Mammals.—Owing to the religious prejudice against taking animal life in Tibet, we were unable to collect any mammals.

Insects.—We were fortunate in obtaining a large number of new species of beetles, grasshoppers, and crane-flies; one new species of saw-flies; several new varieties of butterflies; and two new species of ants.

Flowers.—The collection of flowers has not yet been thoroughly examined, but two, and possibly three, new primulas have already been determined, from the dry country in the neighbourhood of Lho Dzong.

Birds.—We collected no birds whatever.

DISCUSSION

Before the paper the CHAIRMAN (Colonel Sir CHARLES CLOSE) said: As most of those here know, there is a region on the Earth's surface where seven of the greatest rivers in Asia are, as it were, bunched together. I will not repeat their names because I am sure you know them all. That particular region has been very largely explored by Mr. Kingdon Ward and for his explorations we had the pleasure of awarding him a gold medal. In 1933 Mr. Ronald Kaulback accompanied Mr. Kingdon Ward, and in 1935 he organized his own expedition and was accompanied by Mr. John Hanbury-Tracy. This time he did not go into the exceedingly tangled region where those seven rivers are almost united, but he went to an even more remote place. He went north and west into an area which no European had penetrated before. I think I may say that there are not many areas of about 50,000 square miles so very little known as that which Mr. Kaulback has explored. He went there living on the country, helped no doubt by his knowledge of Tibetan, and by the endurance and persistence that every explorer should have and which he has in a marked degree. I now ask him if he will kindly give us his lecture.

Mr. Kaulback then delivered a summary of the paper printed above, and a discussion followed.

The CHAIRMAN: We should all like to hear Mr. John Hanbury-Tracy.

Mr. JOHN HANBURY-TRACY gave a short account of his journey, from Shugden Gompa down the Ngagong Chu and north into the Salween basin, which has been incorporated in the paper printed above (pp. 106–09).

Mr. STANFORD: I have absolutely no claim to say anything to you to-night, but I did have the good fortune to be able to assist Ronald Kaulback and John Hanbury-Tracy in the very early stages of their journey. It has been perfectly marvellous to hear now what they did and how far they got. As you are all aware from what you have heard to-night, they are no ordinary men, and that became deeply impressed on me during the two visits which Ronald Kaulback paid me in Myitkyina. My wife and I both realized that Mr. Kaulback was quietly confident that he was going to do a big thing, and that he had a very big thing to do. I know nothing whatever about Tibet, as I have never been north of Fort Hertz, but I hope that everybody can appreciate the extraordinary difficulties in that journey which have been entirely glossed over: the leeches, the incessant rain and cold, the complete absence of roads, and the trouble with food and transport.

The Myitkyina district is the only area, I think, in the Indian Empire in which human sacrifice still survives, though great efforts have been made to put it down. This is in fact one of the least-known parts of the enormous semi-circle of mountains which starts with the Pat Koi Naga Hills, and goes on to the Mishmi Hills, Singhpo Naga Hills, the Kumon Range, and round to the Sajyang Pass; in between the frontier is still undelimited. The difficulties even in getting through into Tibet are enormous. Mr. Kaulback has said very little about them, and I had better not say more on that point except that there are tremendous gaps of natural history to be filled in in that area. Though most of the survey work is done, the mammals and the birds are practically unknown. Botanists have worked parts of the area very thoroughly: Kingdon Ward and, farther east, George Forrest, as well as Reginald Farrer, who died in Burma near the Tibet border.

One interesting discovery, to me at least, which Mr. Kaulback made on his way up before he actually crossed the watershed was that of the ibis-bill breeding in the Seinghku Wang. It has never been found anywhere, I think, east of Garwhal, and it has not been found breeding in the mountains of North China, but Mr. Kaulback has proved conclusively that the bird must have been nesting in the area he visited. There are also musk-deer in the area, but no European has ever obtained them.

The CHAIRMAN: We have listened to an excellent account of a fine piece of exploration. Mr. Kaulback and his companion actually mapped an area of something like 25,000 square miles. If anybody here wishes to do the same it will take them all their time to map such an area in twenty-one months. I think you can all picture to yourselves what is entailed in exploring such difficult country, practically the size of Ireland. Mr. Kaulback and Mr. Hanbury-Tracy achieved that, and what they have done represents new and valuable work from a geographical point of view.

I was glad to see my old friend the river Salween on the screen again. Many years ago I knew the Salween a great deal farther to the south. I remember getting to a village on the bank of the Salween and asking the headman, "How deep is the river?" The headman being in rather a difficulty scratched himself, as they sometimes do in that part of the world when mentally stressed, and replied: "The river is as deep as the hills are high." The Salween which I knew is very much like the Salween about which we have heard to-night. It rushes down through narrow gorges and is a great and impressive river, well worth exploring. We hope that our lecturer will carry out his determination to go one day and find its ultimate source. In saying that I bring my remarks to a close and, in your name and the name of the Society, thank Mr. Kaulback for his admirable lecture.

KARAKORAM NOMENCLATURE

PROFESSOR KENNETH MASON

IN publishing the conclusions reached by the Karakoram Conference during the winter of 1936, it seems appropriate to place on record both the origin of that conference and the various stages of its work. It was during a study of the literature of the Karakoram more than twenty years ago that I noted the growing inconsistencies regarding range-names among travellers and writers on the region. At the end of my paper on the Shaksgam valley and Aghil range read before the Society on 24 January 1927, I called attention to these inconsistencies (*Geogr. J.* 69 (1927) 311), and in notes by Dr. T. G. Longstaff and myself, written after the discussion on that occasion and published with my paper, certain tentative proposals regarding the range names were put forward for examination. These proposals were at the same time submitted to the Surveyor-General of India (Sir Edward Tandy), who expressed the opinion that the whole question of Karakoram nomenclature should be discussed by geographers and travellers with special knowledge of the country. In a semi-official letter to me, a copy of which he addressed to the Society, he asked me to consult with the Royal Geographical Society, and intimated that he would be prepared to accept the decisions reached after such consultation.

In his preface to my official report on the Shaksgam Expedition of 1926, Sir Edward Tandy gave his personal views as follows:

> I do not consider this department should decide questions which depend so much on international usage. We can only assist by publishing the suggestions of our best experts, and then hope that the Royal Geographical Society, which includes all the principal geographers and explorers interested, will find an early opportunity of discussing these suggestions and of arriving at decisions, in which case we shall be happy to accept them and to incorporate them on our future maps (*Records of the Survey of India*, vol. xxii, p. iv).

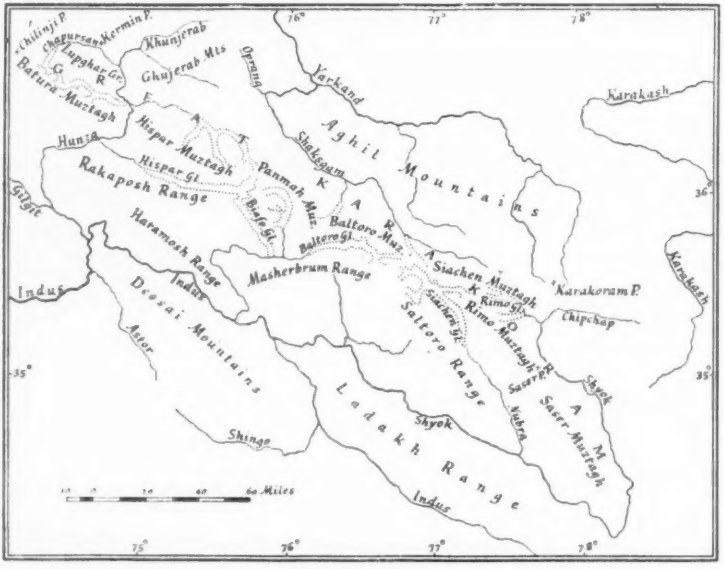
This was the origin of the special interest which the Society has taken in the matter during the last ten years.

While on leave in England in 1927, and in India subsequently, I devoted much time to collecting the references from published material, discussed them personally and by letter with various travellers and experts, and compiled a map of the whole region from Survey of India and other sources. In the *Journal* for September 1929 (p. 276), and January 1930 (pp. 35, 38, 44) appeared papers and letters on the subject; and at an afternoon meeting of the Society on 12 May 1930, I initiated a discussion with a paper that had previously been submitted to the Surveyor-General of India (Brigadier R. H. Thomas) and had received his general approval (*Geogr. J.* 76 (1930) 143–58). The resulting discussion however showed two apparently irreconcilable opinions, and it was felt that until a detailed modern map showing the relief of the whole area was available, it was impossible to reach a conclusion generally acceptable to all.

The work of preparing this map proceeded slowly, partly owing to the

difficulty of showing such great altitude differences by layer tints, partly because it was necessary to wait for the results of recent expeditions, and partly owing to pressure of work in the Society's drawing office. By the end of 1935 the map was sufficiently far advanced to approach the Surveyor-General (Brigadier H. J. Couchman) to ascertain his views and wishes. In March 1936 the Director of the Geodetic Branch of the Survey of India intimated, on behalf of the Surveyor-General, that a settlement was most desirable, that he would like to be represented at any further conference that might take place, that he would cordially accept an invitation to such a conference, and that the winter of 1936–37 would be most suitable from his point of view.

The Council of the Society had some years before appointed a small Com-



The Karakoram

mittee, with Sir Charles Close as chairman, to deal with the preparation of the map; and from this Committee they chose three members to be their representatives at the conference. Invitations to the conference were sent both to the Surveyor-General and to the Director of the Geological Survey of India, and a collection of cuttings giving the views of various authorities was sent by the Society to them and others interested. During the summer of 1936 a provisional edition of the Society's map was brought out and also sent to these people.

Meanwhile in India the whole policy of naming features in uninhabited and little-visited parts of the Himalaya was under consideration, the result of which was the issue of a letter from the Surveyor-General to various bodies interested, among which were the Royal Geographical Society and the

Himalayan Club. This letter, dated September 1, laid down the principles which would underlie the policy of the Survey of India regarding the naming of peaks and other features in the Himalaya and neighbouring mountain ranges. Sir Harold Couchman's letter is as follows:

As you are perhaps aware the question of the entry of names invented by explorers and others for peaks and other features of the mountain systems to the north of India on maps published by the Survey of India is one on which there has been occasional controversy.

The practice of the Survey of India in the past has been that no names should be entered on its maps, of areas for which it considers itself responsible, unless they have been found to be of local or at least indigenous origin. It has admittedly departed from this practice in the case of Mount Everest, but it will be generally agreed that the highest mountain in the world is entitled to special treatment, especially when the result was so euphonious. In the absence of a local or indigenous name, the old practice was to allot a symbol, usually a letter and a number. This practice has however been abandoned on our maps for many years except in the case of K^2 which, as probably the second highest mountain, is perhaps also entitled to special treatment.

This practice has had two results, one favourable, the other unfavourable. The favourable result is that there has been no temptation to give personal names to peaks, the embarrassment of selection of the person to be so honoured has been avoided, and the situation, not unknown, of the name of a peak being changed because the reputation of its owner had lessened has not occurred.

The Survey of India will always be grateful to its predecessors for this result.

The unfavourable result is that owing to absence of local or indigenous names in these sparsely inhabited areas our maps are undoubtedly deficient in names. With the increasing growth of Himalayan travel this defect is becoming of increasing prominence.

The position has therefore been examined and it has been decided that the embargo on invented, other than personal, names should be removed.

Invented names will be accepted by the Survey of India for its maps taking into consideration the following points:

(i) Lack of local names in the vicinity.
(ii) Suitability of the names.
(iii) When applicable, the degree of currency among climbers and explorers that they have already obtained.
(iv) Personal names will not be accepted.

Suitability is difficult to define, but entirely fanciful or humorous names will not be acceptable. Well-known English names of peaks, such as those in the Karakoram and the Sikkim Himalaya, will be considered for adoption at once.

You will no doubt agree that this change in policy should be brought to the notice of travellers and I would request your assistance in doing so either by the publication of this letter or by a reference to its contents.

The Survey of India will be grateful to past, present, and future explorers for any suggestions they may care to make. As regards the language of the names we would prefer that English names be confined to the more popular climbing centres. In the lesser-known regions explorers are requested to suggest names freely after consultation with their local guides or coolies. Nalas, cols, glaciers and peaks may be named after some local pasturage or other existing name, or may be invented with reference, say, to shape, colour, or some other

distinctive feature. Such names should normally be given in the local vernacular and should be pointed out to the local people so that they may the more rapidly gain currency. English names should be given sparingly in areas which are likely to be unimportant from a mountaineering point of view.

Explorers are requested to report their proposed names with sketches or annotated copies of Survey of India maps to me either direct or through you. In sending in reports full details should be given of the reasons for the proposed names, with meanings in English, and the local language adopted.

On receipt of this letter it seemed to us that during the winter conference we might usefully discuss, not only the broader questions of regional and range names, but also the detailed grouping of massifs in the Karakoram, their names, and those of their chief individual summits. I had collected a large number of notes and references relating to this subject during the last fifteen years, and had already arranged many of the known peaks and massifs into groups. It had already appeared to me certain that if we were to obtain a settlement of the main problem which would be acceptable to all and which would avoid the barren controversies of the past, we must abandon the old proposals which I had put forward and pressed in 1927 and 1930, in spite of the fact that they had gained a considerable amount of support and acceptance. We had to find some other classification of the mountains which embodied the points of agreement and met the criticisms of those who objected most strongly to the earlier proposals. During the last three months of the year I therefore drew up a detailed draft memorandum for discussion by the conference, and placed the major groups tentatively on our provisional map.

Colonel C. G. Lewis, then Director of the Geodetic Branch of the Survey of India, who had held charge of the recent modern surveys in the Chitral and Gilgit Agencies, and who had considerable experience of the difficulties of the problem, was appointed by the Surveyor-General to represent the Survey of India. He arrived in November 1936, bringing with him the maps and blue prints of the still later surveys.

The draft memorandum was then exhaustively examined point by point at no less than nine informal meetings of the conference. As soon as the first general principles were agreed upon, the general approval of the Surveyor-General was asked and obtained. As work progressed, Colonel Lewis explained the proposals to Sir Sidney Burrard, who had taken so active an interest in the matter since it became acute ten years ago. Typed copies were sent to India for examination and criticism. By the time the conference met officially on March 23, the revised memorandum, which had been circulated for a last scrutiny, was practically in its final form. With a few minor amendments it was then set up in type and copies were circulated to those geographers and travellers known to be particularly interested.

It was most gratifying to learn that the proposals met with general approval, Sir Sidney Burrard's support being particularly generous. In a letter dated 23 April 1937, he wrote as follows:

Lewis has shown me the outlines of your solution of the Karakoram problem. This problem has confronted the Survey for fifty years. Colonel Strahan used to mention it as unsolved. I must send you my congratulations on your success in finding a solution that is both scientific and artistic. Your Committee's

solution will meet with the approval of British India and of Central Asian explorers. I regard your success as remarkable.

When a long outstanding problem is solved, it is generally easy to say that the solution is obvious. But the fact remains that the problem of Karakoram nomenclature has been a real difficulty facing the Survey of India for half a century. The solution has only been attained by much thought and work; and I can only do justice to my own feelings by sending you my warm congratulations.

I should like to place on record my own personal appreciation of this generous tribute to the Committee's work.

The conclusions of the conference were reported to the Council on 5 April 1937, and the detailed recommendations were submitted to the Surveyor-General of India for sanction. In a letter dated 30 August 1937, he gave his approval to the proposals without qualification of any kind. I should like to take this opportunity of thanking Sir Harold Couchman and Brigadier Lewis, who has since succeeded him in the Surveyor-Generalship, for their courtesy and close co-operation throughout.

A few remarks regarding the decisions may perhaps not be out of place. The general principles underlying the scheme have been to define and name the topographical features as they exist to-day and to avoid theorizing on their structure and origin. Much of the confusion that has arisen in recent years has been due to the introduction of conflicting theories of structure based on insufficient data. Once we had a comprehensive map showing not only the relief and topography clearly from the most recent surveys, but also such details as the ice and permanent snow, it became a problem of dividing the whole region into suitable geographical blocks, of sub-dividing these blocks into suitable groups and massifs, and then of searching for and agreeing upon the most suitable names. This meant a detailed study of the writings and maps of a large number of explorers and cartographers, and the settlement of a number of conflicting statements. The names of the larger divisions were first agreed upon. The name "Karakoram," which had originally been extended from the pass of that name to the mountains by European geographers, was further extended to include the whole region to which subsequent travellers have applied it, while the term "The Great Karakoram" was accepted for the great alinement of ice massifs that extends from one end of the region to the other. It was felt that the locally preferred name "Muztagh," which also had considerable historical significance, could be suitably applied to the major divisions of the Great Karakoram. The muztaghs lent themselves to subdivision into groups, and the groups into massifs and individual peaks. It was felt that the term *muztagh* was inappropriate either linguistically or descriptively for the subdivisions of the lesser Karakoram, and, for want of a better term, they were called "ranges." The muztaghs have been named in every instance but one from the great glaciers which drain them; the ranges of the Lesser Karakoram from the most conspicuous mountain on their alignment.

The groups have been named from the best known locally named feature, often a glacier, whenever possible from the most accessible side; there are a

few exceptions, where it has been deemed advisable to retain some name that has long been associated with the group in existing literature, as, for instance, the Kanjut Group. A few of the more important unnamed peaks have been named, either from their group-names, or from an accessible locality, with a suitable affix such as *Sar*, or *Kangri*, according to the language of the region, and according to local practice. A few of the recognized English names for the best known and most prominent peaks have been retained, but only a very few. The names so retained from long usage are K^2, the Muztagh Tower, and Broad Peak. The "Hidden Peak" of Conway has long been known in the records of the Survey of India as Gasherbrum I, and this official name is retained. The conspicuous unclimbed summit north-east of K^2, inappropriately called "Staircase" on unofficial maps of the past, has been named "Skyang Kangri," from the glacier on its north. A number of other unofficial English names for peaks have been rejected; some of these peaks have been renamed, while the renaming of others has been left to subsequent travellers. All personal names have been discarded. Notes are given in the appendices explaining the different questions involved. Regions which are or were inadequately mapped at the time of the conference have been left in outline for subsequent treatment.

It is not to be expected that all the decisions reached will meet with the approval of every student of Karakoram literature and geography. It is true that controversy is keenest where facts are fewest. In these distant and sparsely inhabited lands some conventionalism is essential to the needs of ordered geography, and it is to be hoped that travellers and geographers will in future accept the nomenclature that has been agreed upon and authorized. In some instances it may be necessary to allude in papers to old and unofficial nomenclature for the purposes of identification, but it is hoped that travellers will co-operate to bring into use the authorized names as early as possible, so that the literature of the Karakoram may be freed from the ambiguities and inconsistencies of the past.

KARAKORAM CONFERENCE REPORT

The recommendations of the Karakoram Conference as accepted by the Council of the Royal Geographical Society and approved by the Surveyor-General of India are printed below.

I. The term *Karakoram*. We recommend that the term "The Karakoram" be used to denote the mountain region whose boundaries are defined thus:

On the south: by the Shyok river from its bend at about long. 78° 15′ (map sheets 52 J, F, B, A, 43 M) to its junction with the Indus, about long. 75° 55′; then by the Indus to its junction with the Gilgit river about long. 74° 40′ (43 I); and by the Gilgit river (43 I, 42 L, H) to the confluence of the Ishkoman river about long. 73° 45′.

On the west: by the Ishkoman and Karumbar rivers (42 H, L) to the Chilinji pass.

On the north: from the Chilinji pass, down the Chapursan river, over the Kermin pass to Rich, and down the Kilik river to its junction with the Khunjerab (42 L); then up the Khunjerab river to the Khunjerab pass, across the head of the Oprang Pamir to the Oprang pass, and down the Oprang river to its junction with the Shaksgam (42 P); then up the Shaksgam river to its source at Wood's Pass "G" (for which we propose the name *Shaksgam pass*) (42 P, 51 D, 52, A, E); then to the snout of the Rimo–Yarkand river source, and by the left bank of the Rimo glacier to the junction of the Rimo river and the Chip-chap (52 E).

On the east: by the upper Shyok from the Rimo–Chip-chap junction to the great bend in the river about long. 78° 15′ (52 E, F, J).

Note: The use of the term "the Karakoram" for a region is in accordance with the general usage among geographers for many years past, but up till now the boundaries have not been defined. The proposed boundaries exclude the Aghil mountains, all mountains east of the upper Shyok and on the Tibetan plateau, the mountains between the Shyok and the Indus rivers ("the Ladakh range"), but they include the mountains of Hunza west of the Hunza river, as far as the Karumbar–Ishkoman river.

Though not directly in the terms of reference of the conference, we suggest that "the Aghil mountains" be defined by the Shaksgam on the south and west as far as the Oprang confluence, on the north by the Shaksgam and Raskam (Yarkand) rivers, and on the east by the Yarkand river tributary draining from the Karakoram pass.

We also suggest that the "Ladakh range" be restricted to the definite range in Ladakh, between the Indus and Shyok rivers; that the term "Zaskar mountains" be restricted to the mountains of Zaskar, or at least not extended east of the upper Sutlej; and that the term "Deosai mountains" be applied to the mountain region defined on the north by the Indus from long. 76° 15′ to long. 74° 45′, and on the south by the Astor, the Das Kirin, and the Shingo rivers, to the junction of the latter with the Suru river, and then by the Suru river to its confluence with the Indus.

II. *The Great Karakoram*. We recommend that the term "The Great Karakoram" be given to the main crest zone of the Karakoram, from the

mountain Koz Sar (36° 43′ 10″, 74° 05′ 19″, Map 42 L) in the west along the crest zone south of the Batura glacier, north of the Hispar, Panmah, Baltoro, and Siachen glaciers, and along the watershed between the Nubra and upper Shyok rivers.

III. *Divisions of the Great Karakoram.* We consider it desirable to divide the Great Karakoram into sections, and to apply the descriptive term *Muztagh* [1] to each section. The sections proposed are as follows:

(A) *The Batura Muztagh:* From Koz Sar, south of the Batura glacier, to the gorge of the Hunza river (42 L).

(B) *The Hispar Muztagh:* From the gorge of the Hunza river, north of the Hispar glacier, to the head basin of the Biafo glacier (42 P).

(C) *The Panmah Muztagh:* The groups drained by the Panmah glacier and its main tributaries from the head of the Biafo glacier to the West Muztagh pass (42 P, 51 D, 52 A).

(D) *The Baltoro Muztagh:* From the West Muztagh pass, north and east throughout the length of the Baltoro glacier, to its head south-east of the Gasherbrum group (52 A).

(E) *The Siachen Muztagh:* From the above head of the Baltoro glacier along the northern mountains of the Siachen glacier and south of the Shaksgam valley, as far as the pass between the Teram Shehr and Rimo glaciers, thence north of the Central Rimo glacier to its snout (52 A, E).

(F) *The Rimo Muztagh:* From the pass between the Teram Shehr and Rimo glaciers along the mountain groups between the Siachen and the upper Shyok, as far as the Saser pass (52 E).

(G) *The Saser Muztagh:* From the Saser pass to the south-eastern extremity of the Great Karakoram in the bend between the upper Shyok and the Shyok rivers (52 E, F, J).

IV. *Mountain groups of the Great Karakoram.* On small-scale maps it is neither feasible nor desirable to enter any but the most important peak names; but it is possible now to classify the peaks in groups, and we considered that it would be convenient if group names were to be inserted on small-scale maps; peak names, excepting those of the most important, being reserved for maps on the scale of 1 : 250,000 and larger. An attempt to group the peaks of the Great Karakoram *muztaghs* has been made in Appendix I of this report.

V. *Mountain divisions of the lesser Karakoram.*—So far we have only dealt with divisions and subdivisions of the Great Karakoram. The mountains of the lesser Karakoram are not so easy to deal with, for they do not lie on a single long alinement of groups. The most important of them however fall on a series of shorter alinements, which might be called "ranges," though the term is not very satisfactory. They correspond to the "Muztaghs" of the Great Karakoram, but we consider this Turki word to be unsuitable for them.

[1] *Muz* = ice; *Tagh* = mountain. Muztagh, not Mustagh, is correct.

(A) North of the Great Karakoram, in Hunza territory, there are two systems of mountains, one on each side of the Hunza river, which may be called the *Lupghar group* and the *Ghujerab mountains* respectively.

The remainder of any importance all lie to the south of the Great Karakoram, and may be conveniently listed on the following alinements [1]:

(B) *The Rakaposhi range*, from the Hunza river west of the peak Rakaposhi, following the snowy crest zone between the Hispar and Chogo Lungma glaciers as far east as long. 75° 30′. Two subsidiary groups at the eastern end may be considered independent of Rakaposhi. These are the *Ganchen group* and the *Meru group*.

(C) *The Haramosh range*, from where it joins the Rakaposhi range about long. 74° 50′, along the crest zone between the Chogo Lungma glacier, Basha and Shigar rivers on the north and the Indus on the south.

(D) *The Masherbrum range*, from the junction of the Braldu and Basha rivers, west of Mango Gusor, along the crest zone south of the Braldu river and Baltoro glacier, as far east as the Kondus glacier and valley. Two independent groups, at present unnamed, extend south from the Masherbrum range.

(E) *The Saltoro range*, lies between the Kondus on the west, the Siachen and the Nubra on the east, and the Shyok valley on the south. It is crossed by the Saltoro or Bilafond pass.

An attempt has been made to group the various massifs of these "ranges" in Appendix II.

APPENDIX I: MOUNTAIN GROUPS OF THE GREAT KARAKORAM

In the following lists an attempt has been made to collect the mountains of the Great Karakoram into groups, and to name these groups from some geographical feature, generally the most important glacier draining from them. Some groups are, of course, better known than others, and it has been easier in these instances to define the group boundaries with greater precision.

Occasionally comments have been made on peak names, while a few additional names have been suggested.

Where possible, the latitudes, longitudes, and heights have been given from the Survey of India triangulation pamphlets, unless stated otherwise for definite reasons, and where other values of peak co-ordinates have been obtained by other observers comment has been made.

Figures in italics are only approximate, and are measured from topographical maps; they are only given for the purposes of identification. Where co-ordinates are given only to the nearest minute, thus *36° 35′, 74° 19′*, the map from which they are taken is not directly adjustable to existing Survey of India maps. Heights shown in brackets, thus (*21,250*), are derived approximately from an examination of the contours.

Where names for individual peaks have been suggested, the principle has been to name them from the most accessible valley or glacier draining them. Suggested new names for peaks are shown in italics; old names that we recommend should be dropped are in brackets.

[1] The new survey of 1931 in Sheet 42 L is not available in England; consequently we have not attempted to group the mountains between the Gilgit and Hunza rivers south of the Batura Muztagh.

Mountain Groups of the Great Karakoram.

(A) *Batura Muztagh:* Map 42 L.

(a) *Koz group*, at the head of the Koz Yaz (glacier).

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
Koz Sar	21,907	36° 43′ 10″	74° 05′ 19″	Pk. 2/42 L
—	*21,250*	36 43 24	74 06 55	Pk. 1/42 L
—	*20,345*	36 43	74 11	42 L

(b) *Yashkuk group*, at the head of the Yashkuk glacier.

—	*21,548*	36° 40′	74° 13′	42 L
—	*21,915*	36 39	74 14	42 L
—	*20,060*	36 38	74 16	42 L

(c) *Kampire Dior* group, at the watershed between the Batura and Yashkuk glaciers. Kampire Dior, "the house of the old woman," is derived from a well-known legend of the Chapursan valley, the best version of which is given by Lorimer in *Geogr. J.* 71 (1928) 535.

Kampire Dior ..	23,434	36° 37′ 32″	74° 19′ 10″	Pk. 24/42 L
—	22,740	36 38 24	74 21 33	Pk. 23/42 L

(d) *Kuk group*, at the head of the Kuk-i-jerab valley. *Kuk Sar* signifies "the summit of Kuk."

Kuk Sar	22,751	36° 40′ 08″	74° 25′ 18″	Pk. 21/42 L
—	*22,050*	36 39 06	74 25 23	Pk. 22/42 L

(e) *Batura group*, the enclosing south wall of the head of the Batura glacier.

—	*22,547*	*36° 35′*	*74° 19′*	42 L
—	22,590	36 34 08	74 22 51	Pk. 25/42 L
—	22,409	36 33 20	74 25 50	Pk. 48/42 L
—	25,294	36 31 54	74 30 01	Pk. 31/42 L
—	25,540	36 30 39	74 31 26	Pk. 32/42 L

Peaks 32 and 31 are known in the Survey of India records as Hunza-Kunji I and Hunza-Kunji II. 'Kunji' really means nothing and is probably a triangulator's error for 'Kanjut,' another name for Hunza. There is no sense in the compound name, but it is difficult to suggest a better name until the southern slopes of the massif are surveyed. (For Burrard's views, see his 'Sketch, etc.,' 2nd Edn., vol. 1, pp. 51, 52.)

(f) *Pasu group*, at the head of the Pasu glacier.

—	23,897	36° 28′ 51″	74° 36′ 53″	Pk. 55/42 L
—	24,970	36 26 30	74 40 52	Pk. 33/42 L

The triangulator's designation for Peak 33, Hunza Kunji III, should be dropped.

(g) *Atabad group*, the eastern group of the great ridge, extending to Atabad hill-station of the Indo-Russian triangulation, above the village of Atabad.

Boiohaghur Duanasir	24,044	36° 24′ 10″	74° 41′ 43″	Pk. 34/42 L
—	—	36 23 32	74 42 57	Pk. 35/42 L

Boiohaghur Duanasir, "where only the horse of the devil can go," is the name given to Conway and Bruce for this peak by the people of Baltit in 1892. Its name in Survey records is Hunza-Kunji IV. According to Burrard ('Sketch. Geol. Geog. Him. and Tib.,' 2nd edn., p. 49), Colonel Lorimer sees in this word three Burushaski words: *Boyo*, a divine animal; *Haghur*, a horse; and

Donas, one who opens. Possibly a more correct form than that given to Bruce would be *Boyohaghur Donas Sar*, but since the Burushaski language presents difficulty and is little known, it seems advisable to retain the form Boiohaghur Duanasir.

From the survey made of the Batura and this region on the Vissers' Expedition of 1925, it would appear that the height of Peak 35 is about 24,500 feet. Its old name is Hunja-Kunji V. It would, we think, be a mistake to retain these "Hunza-Kunji" names at intervals along this Batura Muztagh.

(B) *Hispar Muztagh:* Map 42 P.

(a) *Momhil group*, at the head of the Momhil glacier.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
—	*23,500*	36° 20′ 56″	75° 00′ 51″	Pk. 3/42 P
Momhil Sar	24,090	36 19 03	75 02 10	Pk. 7/42 P
—	22,500	36 22 43	75 02 47	Pk. 2/42 P
—	*24,860*	36 17 19	75 04 48	Pk. 8/42 P

Momhil, "the grazing-ground of the old woman," *i.e.* no one but an old fool would think of grazing there. Momhil Sar, the "summit of Momhil," the chief peak at the head of the Momhil glacier. (For Momhil, see Schomberg, 'Unknown Karakoram,' p. 233.) The old triangulators' name 'Kunjut No. 3' is meaningless.

(b) *Disteghil group*, at the head of the Malangutti Yaz glacier, in which lies Diste Ghil, "the sheepfold in the hill." Schomberg's spelling is to be preferred to Visser's, *Dasto Ghil*, which is at present on the map. We think that the peak should have the addition *Sar*, but it is a small point. Visser's spelling of the Malangutti Yaz is to be preferred to Cockerill's and Bridge's corruption *Malungidiaz*.

Disteghil Sar (Dasto Ghil)	25,868	36° 19′ 35″	75° 11′ 20″	Pk. 20/42 P
—	*25,250*	36 19 09	75 13 10	Pk. 5/42 P
—	*23,050*	*36 22*	*75 09*	42 P and Visser
—	*24,030*	*36 18*	*75 14*	42 P
—	*24,800*	*36 17*	*75 13*	42 P

(c) *Yazghil group*, at the head of the Yazghil glacier. Yazghil means either "the sheepfold in the snow," or perhaps, according to Schomberg, "the curving ice." *Yaz* is either *ice* or *snow*, and is the common word for a glacier, while *ghil* is descriptive of anything circular or round, and is generally applied to a circular sheepfold. Only one important peak has been fixed in this group as yet, and this is probably more conspicuous from the Hispar side, at the head of the Pumarikish glacier. We therefore suggest the name *Pumarikish* for it, instead of its old triangulators' name 'Kunjut No. 2.'

Pumarikish	24,580	36° 12′ 45″	75° 15′ 12″	Pk. 11/42 P

(d) *Kanjut group*, at the head of the large Jutmaru glacier tributary of the Hispar. A name for one of the summits is forthcoming from its chief glacier. The old name for *Kanjut Sar* was 'Kunjut No. 1.'

Yukshin Sar	*20,570*	*36° 14′00″*	*75° 23′00″*	42 P
Kanjut Sar	25,460	36 12 21	75 25 03	Pk. 12/42 P

(e) *Khurdopin group*, a cluster of summits at the head of the Khurdopin glacier, none of which is as yet well fixed. There was a discrepancy here between Khan Sahib Afraz Gul's plane-table and the work of both Conway

and the Workmans. Individual names should certainly not be given in the present state of our knowledge, but there is undoubtedly a well-marked group which might well be named the "Khurdopin group." On the map they are shown approximately as follows:

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
—	*24,100*	*36° 08′*	*75° 27′*	42 P (from Visser, 1925)
—	*23,000*	*36 07*	*75 34*	
—	*21,780*	*36 15*	*75 36*	
—	*21,250*	*36 17*	*75 36*	
—	*20,460*	*36 08*	*75 38*	

(f) *Virjerab group*, a group of mountains at the head of the Virjerab glacier and between that glacier and the Khurdopin. The limits of this group should at present be undefined, as it has not been triangulated and is little known.

—	*21,180*	*36° 11′*	*75° 39′*	42 P (from Visser, 1925)
—	*21,510*	*36 09*	*75 43*	
—	*20,720*	*36 11*	*75 43*	

(C) *Panmah Muztagh:* Maps 42 P, 51 D, 52 A.

(a) *Nobande Sobande group*, at the head and left of the Nobande Sobande glacier, as far as about long. 75° 57′. This group is only roughly known, first from Godwin Austen's surveys (1861) and latterly from those of the Spoleto expedition of 1929. One peak only has been named and its height is not yet known with any accuracy. The spelling, *Nobande Sobande*, used on Spoleto's map is probably more correct than Nobundi Sobundi of Godwin Austen. *Panmah* is similarly more correct than Punmah.

Bobisghir	—	*36° 02′*	*75° 48′*	42 P (from Spoleto, 1929)

(b) *Drenmang group*, the mountains of the main watershed from about longitude 75° 57′ (Spoleto's map) eastwards, including those at the head of the Drenmang glacier as far south as latitude 35° 59′. Skamri is an important massif of this group, but its height and topography are not yet known in any detail.

(c) *Chiring group*, at the head of the Chiring glacier, south of the Drenmang group as far as the West Muztagh pass.

No peaks have been defined accurately for height in these three groups of the Panmah Muztagh, and no names except Bobisghir and Skamri have been given.

(d) *Choktoi group*, between the Choktoi glacier and the Nobande Sobande glacier. At present we know very little of the group and no peaks have been fixed by triangulation.

(e) *Latok group*, between the Biafo glacier and the Choktoi and Panmah glaciers. There is undoubtedly a high group here at the head of the Latok tributary glacier of the Biafo. Three summits have been triangulated and are listed below. For a discussion on them and their relation to surrounding topography, see *Himalayan Journal*, vol. vi, 1934, p. 71.

—	23,900	35° 56′ 54″	75° 45′ 11″	Pk. 18/43 M
—	23,440	35 55 43	75 49 24	Pk. 19/43 M
—	22,790	35 55 14	75 50 21	Pk. 20/43 M

Conway named the first "the Ogre"; Mrs. Bullock Workman considered the illustration given by Conway as "the Ogre" was of a smaller mountain nearer to the Biafo, and named the 23,900-foot summit "Kailasa," showing it with a

height 23,914 feet. Auden agreed with the Workmans that "the Ogre" of Conway was not the high peak, and stated that this faulty identification of Conway had thrown out the position of the Biafo glacier on his map. It appears to us too early to assign names to individual peaks of this group, but we recommend that neither "the Ogre" nor "Kailasa" should be adopted.

(D) *Baltoro Muztagh:* Map 52 A.

(a) *Paiju group*, at the extreme western end of the Baltoro Muztagh, includes the mountains west of the main trunk of the Trango glacier tributary of the Baltoro. It includes the mountains enclosing the Surgus, Börum, and Choricho glacier tributaries of the Panmah, as well as the remarkable Paiju Peak (21,650 feet), with its strata set vertically, which gives it an "organ-pipe" appearance (for illustrations see De Filippi's 'Karakoram and Western Himalaya,' particularly Panorama B, which shows the whole of the Baltoro Muztagh from Paiju Peak to Gasherbrum; see also *Himalayan Journal*, vol. ix). The coordinates of Paiju Peak are approximately 35° 43′ 00″, 76° 07′ 00″, 21,650 feet.

(b) *Trango group*, east of the Paiju group, includes the mountains east of the main trunk of the Trango glacier and those west of the Dunge glacier (longitude 76° 13′). The heights of various conspicuous summits are given on Spoleto's map between the Trango and Dunge glaciers, but we do not know the height of the most conspicuous summit, the Trango Tower. The spelling Trango is probably better than Spoleto's Tramgo, or the older Survey spelling Trahonge.

(c) *Lobsang group*, at the head of the Muztagh glacier and its tributaries.

The glaciers here are shown incorrectly on Conway's map. Ferber's map, in *Geogr. J.* 30 (December 1907), shows the glaciers better, but they are shown best on Spoleto's map of 1929. Abruzzi (1909) did not survey them. We suggest the name *Lobsang group* from the ancient camping ground of Lobsang Brangsa in the trough of the Muztagh glacier. This name "Muztagh glacier" was apparently given by Ferber as leading to Younghusband's East Muztagh pass, and has been adopted since by Abruzzi and Spoleto, though it is not the local name. Three summits are conspicuous; their heights are known with fair accuracy, and they have been named.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
Biale (*6729* m.) ..	.. *22,080*	*35° 49′*	*76° 15′*	Spoleto
Lobsang (*6225* m.)	.. *20,420*	*35 48*	*76 18*	Spoleto
Muztagh Tower (*7273* m.)	*23,860*	*35 50*	*76 22*	Spoleto

Biale is spelt Piale on Conway's and Ferber's maps, when used for the glacier name. Guillarmod gave Biale and De Filippi followed suit. Spoleto's map gives Biale for both peak and glacier, as well as the height; and as his party spent some time in the region, his spelling should, we think, be accepted.

"Seven Pagodas" was given as a descriptive name by Ferber, who shows an illustration in *Geogr. J.* 30 (December 1907). Lobsang Brangsa, "Lobsang camping-ground," is at the foot of the peak, and we suggest the name *Lobsang* instead of "Seven Pagodas" for the peak. The height is from Spoleto's map.

The Muztagh Tower is one of the most striking peaks in the whole Karakoram, and has been commented upon by almost every traveller to those parts from Conway onwards. Conway named it; there are some striking photographs of it in De Filippi's 'Karakoram and Western Himalaya.' It is now so well known in Karakoram literature and is so suitable for this great rock tower that it would be right, in our opinion, to retain it. Its height has been determined

by photographic survey as 7273 metres (23,860 feet). It is far more conspicuous than the lower "Black Tooth," which rises to the south-east to a height of 6719 m., and is part of the same massif. (We think that "Black Tooth" was named by Ferber, and are not absolutely certain of its position on Spoleto's map.)

Spoleto's map shows another great peak with a height of 6974 m. (22,550 feet) at the head of "the Younghusband glacier." Nothing is as yet known of this summit, and we suggest that it be at present excluded from any group. We also suggest provisionally re-naming the "Younghusband glacier" the *Biange glacier*, from the camping-ground used by Abruzzi at its mouth, or possibly leaving the glacier unnamed.

(d) *K² group*, at the head of the "Godwin Austen glacier."

The name "Godwin Austen glacier" was given by Conway. Being a personal name, it is unsuitable, as are the other personal names in this region, such as the Savoia pass, the Savoia glacier, De Filippi glacier, Sella pass, which all first appeared on Abruzzi's map after his 1909 expedition.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
—	*23,520*	*35° 50′ 30″*	*76° 26′*	(7170 m. Spoleto)
—	*23,830*	*35 52*	*76 27*	(7263 m. Spoleto)
—	*22,330*	*35 51*	*76 29 30″*	(6805 m. Spoleto) (22,490 feet Abruzzi)
K^2	28,250	35 52 55	76 30 51	Pk. 13/52 A
—	25,354	35 52 40	76 31 45	Pk. 14/52 A (Abruzzi)
Skyang Kangri ("Staircase")	24,750	35 54 40	76 33 35	Pk. 12/52 A
—	*23,020*	*35 56*	*76 34*	(Mason)

Only the more important summits have been included in the above list, from the Survey of India triangulation pamphlet 52 A, from Spoleto's map, and from the Shaksgam survey, 1926.

Peak 22,330 is the highest summit on the south ridge of K^2. Peak 25,354 is not a true peak, but merely a shoulder or flattening of the steep east ridge of K^2. Abruzzi's height for "Staircase peak" (24,078 feet) is much too low. Two photographic heights from the 1926 results, based on the height of K^2 (28,250) gave closely agreeing heights with a mean of 24,750 feet. Spoleto's map follows Abruzzi and gives 7339 m.=24,078 feet. Professor Mason is convinced this is wrong.

The surveyor's name *Skiyang Lungpa* would be better spelt Skyang Lungpa. Skyang or Kyang means "wild ass." The initial "s" before consonants "g," "k," and "p," which is silent in some parts of Tibet, is generally pronounced in the Ladakhi dialect, *e.g.* Spiti, Skyangpo-che (see *Rec. Surv. of India*, xxii, pp. 172–3).

This name "Skyang Lungpa glacier" is much more suitable for the glacier draining eastwards from "Staircase Peak" than the "Windy Gap glacier" (*Ghiacciaio della Sella dei Venti*), which was given by Spoleto; and if it is accepted, we suggest that "Staircase Peak" be re-named *Skyang Kangri* ("the ice-mountain of the wild ass") from the glacier.

(e) "*Broad*" *group*, bounding the "Godwin Austen" glacier on the east.

The name "Broad Peak" was given by Conway in 1892. There are no Survey

of India triangulated points in this group, and Conway did not determine the height of the highest point. On Abruzzi's map the height of Broad Peak is given as 27,132 feet, but no peak of that altitude was found by Mason in the region in 1926. Mason's photographic height for the highest peak, in almost exactly the same position as Abruzzi's Broad Peak, was 26,400 feet (see *Geogr. J.* (October 1927) 349, and stereographic survey map accompanying that paper). The other peaks given below are from Spoleto's map, on which he has shown a height of 8051 metres (26,414 feet) for the highest peak, and approximately the same heights as Abruzzi for the others, except point 25,330, for which Abruzzi gives 26,188, which seems also too high. Spoleto's metric heights have been included below.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
—	.. (7930) 26,017	35° 50′ 25″	76° 33′ 40″	Pk. 15/52 A
—	.. *(7862) 25,925*	*35 49*	*76 33 40*	52 A
Broad Peak	.. (8051) 26,414	35 48 35	76 34 25	Pk. 16/52 A
—	.. *(7721) 25,330*	*35 48 20*	*76 34 40*	[1] Pk. 17/52 A
—	.. (7470) 24,510	35 47 50	76 35 30	Pk. 18/52 A

(f) *Gasherbrum group*, the conspicuous group at the head of the main trunk of the Baltoro glacier, comprising two main massifs.

On Conway's map Gasherbrum I is named "Hidden Peak," and the name Gasherbrum is reserved for the massif containing peaks II, III, and IV, which rise from a long east-to-west ridge. Gasherbrum I is hidden from the main Baltoro glacier by peak 24,019 (pk. 22/52 A) which rises from the southern ridge of Gasherbrum IV. It is by far the most conspicuous of the group from the south and east. We prefer to retain Gasherbrum I, and to drop "Hidden Peak."

The Survey of India triangulated positions were all checked by photographic survey in 1926. Mason's positions and heights of Gasherbrum I and II agreed almost exactly with the Survey of India values, but his heights for Gasherbrum III and IV were 26,000 and 26,180 instead of 26,090 and 26,000, making IV slightly higher than III. We prefer however the Survey heights, as only the tips were seen by Mason; the Survey heights are given below. These were accepted on Spoleto's map.

Of the other peaks included, 24,500 is a prominent summit on the eastern arête of Gasherbrum II (the height 7772 m. or 25,500 feet shown on Spoleto's map is not correct, the ridge east of Gasherbrum II falling much more steeply than is shown). Points 24,019 and 22,980 are conspicuous summits on the south ridge of Gasherbrum IV, the heights being taken from Spoleto's map in preference to Abruzzi's, which gives 24,019 and 23,589 respectively.

Gasherbrum IV	.. 26,000	35° 45′ 38″	76° 37′ 02″	Pk. 19/52 A
Gasherbrum III	.. 26,090	35 45 36	76 38 33	Pk. 20/52 A
Gasherbrum II ..	.. 26,360	35 45 31	76 39 15	Pk. 21/52 A
— ..	.. *24,500*	*35 45*	*76 39*	(Mason)[2]
— ..	.. 24,019	35 43 50	76 36 50	Pk. 22/52 A
— ..	.. *22,980*	*35 42 30*	*76 38*	(Spoleto)
Gasherbrum I (Hidden Peak)	.. 26,470	35 43 30	76 41 48	Pk. 23/52 A

[1] It is uncertain whether this point, 25,330, is exactly the same as Abruzzi's 26,188 (35° 48′ 15″, 76° 35′ 10″); but Mason does not believe that this shoulder on the south-east ridge of the Broad peak is over 26,000 feet, and we consider it better to accept the heights from Spoleto's map.

[2] For position see *Geogr. J.*, October 1927, map accompanying "Stereographic survey of the Shaksgam."

(E) *Siachen Muztagh:* Map 52 A, 52 E.

(a) *Sia group*, at the extreme head of the Siachen glacier. It was named by Mrs. Bullock Workman, after her 1912 expedition, "King George V group," a name which has never been accepted by the Survey of India. Siachen means "great rose," the Siachen glacier being so named because of the wild rose bushes near its snout. We suggest the name Sia group, partly because of the name Siachen, and partly because of the connection of the rose with British royalty, thus giving some recognition to the wishes of the explorer.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
Sia Kangri	24,350	35° 39′ 51″	76° 45′ 43″	Pk. 41/52 A
—	23,270	35 37 59	76 47 29	Pk. 42/52 A
—	21,440	35 36 36	76 50 08	Pk. 43/52 A

Mrs. Bullock Workman's map of the Siachen glacier, which shows this group, is published in *Geogr. J.* 43 (1914) 232. The three peaks are those numbered 17, 16, and 15 in the list of her triangulator, Grant Peterkin, and have been accepted in the Survey of India triangulation pamphlet 52 A. The first two were named by her "Queen Mary " and "Mt. Hardinge," names which were not accepted by the Survey of India. We suggest the name *Sia Kangri*, "the ice-mountain of the rose," for the highest. (Photographs by the Workmans in 'Two summers in the ice-wilds of the Eastern Karakoram,' pp. 192, 194.)

Dyhrenfurth's expedition to the upper Baltoro in 1934 maintained that the highest point in the Sia massif ("Queen Mary peak") was over 25,000 feet. It does not seem likely that the Survey of India triangulators, including Collins in 1911, and Mason in 1926, who were definitely on the look-out for high peaks, would have missed one of that altitude. (For a discussion on this point see *Himalayan Journal*, vol. 7, 1935, pp. 145–7.)

(b) *Staghar group*, the mountains on both sides of the Staghar glacier, bounded on the west by the Urdok glacier and on the south by the Siachen glacier. The highest peak fixed prior to Visser's expedition in 1934 was the following, which was obtained by stereo-photogrammetry in 1936 (Mason), which may be verified from Khan Sahib Afraz Gul's plane-tables on the Visser expedition.

—	*21,300*	*35° 47′00 ″*	*76° 46′00 ″*	—

(c) *Singhi group*, at the head of the large left-bank tributaries of the Singhi glacier. The Singhi glacier was first seen by Mason in 1926, and was crossed by members of the Spoleto expedition in 1929, who named it. It was crossed again by Visser with two surveyors, and surveyed by them.

On the blue print of 52 A, showing Afraz Gul's work compiled with the older surveys, the word is spelt *Singi*. Unless there is any special reason for the change, the older spelling of those who gave it, *Singhi*, should be retained.

The group was well fixed by Peterkin on the Bullock Workman expedition to the Siachen glacier in 1912, the highest, 23,630 feet, being named Mount Rose, but for which a better name, in our opinion, would be *Singhi Kangri*. The three peaks are Nos. 20, 21, and 22 of Grant Peterkin's lists (Map, *Geogr. J.* 43 (1914) 232), and have been accepted in the Survey of India pamphlets as Peaks 45, 44, and 49, 52 A.

—	22,360	35° 35′ 47″	76° 57′ 32″	Pk. 45/52 A
Singhi Kangri (Mt.Rose)	23,630	35 35 56	76 59 05	Pk. 44/52 A
—	20,300	35 32 36	76 59 23	Pk. 49/52 A

(d) *Teram Kangri group*, a group first seen by Dr. T. G. Longstaff in 1909,

after crossing the Saltoro pass or Bilafond La on to the Siachen glacier. It was first triangulated by V. D. B. Collins, Survey of India, in 1911, but without a very good connection to India triangulation. It was next surveyed in more detail by Grant Peterkin, of the Bullock Workman expedition in 1912 (*Geogr. J.* 43 (1914) 232). The name *Teram Kangri* was given in Dehra Dun by Dr. Longstaff, with the approval of Sir Sidney Burrard, Surveyor-General, from the only locality place-name *Teram*, in the region. The alteration of the spelling to *Tarim* by the Workmans for the glacier tributary of the Siachen is incorrect.

The group was resurveyed from the north by Mason in 1926 by stereophotogrammetry, based on resection from well-fixed Survey of India triangulated points. Remarkable agreement was obtained with Peterkin's results. The summits below have been given their values from Mason's survey, as these have been used by both Spoleto and Visser for their subsequent surveys in 1929 and 1934. They will be found in the stereographic map of the Kyagar glacier in *Geogr. J.*, October 1927. Collins' and Grant Peterkin's values are given in brackets for comparison.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
Teram Kangri III	.. 24,218*	35° 35′ 50″	77° 03′ 11″	Mason
(Pk. 14/52 E)	(24,218*	35 35 50	77 03 11	Collins)
(Siachen No. 23)	(24,240	35 36 02	77 03 00	Peterkin)
Teram Kangri I..	.. 24,489*	35 34 38	77 05 04	Mason
(Pk. 15/52 E)	(24,489*	35 34 38	77 05 04	Collins)
(Siachen No. 24)	(24,510	35 34 43	77 04 54	Peterkin)
(Pk. 163/52 E)	(24,430	35 34 46	77 05 04	De Filippi)
Teram Kangri II	.. 24,300	35 34 05	77 05 30	Mason
(Siachen No. 25)	(24,300	35 34 11	77 05 25	Peterkin)
(Unnamed) ..	.. 22,920	35 33 18	77 07 40	Mason
	(*22,890*[1]	35 33 22	77 07 45	Peterkin)
(Unnamed) ..	.. 22,530	35 33 02	77 08 15	Mason
(Siachen No. 26)	(22,530	35 33 08	77 08 16	Peterkin)
Apsarasas I ..	.. 23,770	35 32 23	77 09 03	Mason
(Siachen No. 27)	(23,770	35 32 22	77 09 01	Peterkin)
Apsarasas II ..	.. 23,750	35 32 04	77 10 18	Mason
Apsarasas III ..	.. 23,740	35 31 05	77 12 30	Mason

* The position and height drums were adjusted on Teram Kangri I to Collins' triangulated height for this summit, and checked on Teram Kangri III. All the other positions and heights are quite independent of both Collins' and Peterkin's results. We have only given the three highest summits of the Apsarasas ridge, but Mason found three other summits over 23,000 feet near the last, namely:

—	23,580	35° 31′ 12″	77° 11′ 30″	—
—	23,710	35 31 12	77 12 47	—
—	23,570	35 31 15	77 13 11	—

Grant Peterkin's Peak No. 28 (23,350, 35° 31′ 57″, 77° 08′ 40″) is not on the main ridge, but on the south-west arête of Apsarasas I, while his Peak No. 29

[1] Clinometer height.

(23,010, 33° 31′ 05″, 77° 11′ 21″) seems to be a summit on the south-west arête of the first of the three summits, 23,580, listed above. These two peaks of Peterkin were hidden from the north.

Wood's Pk. 16¹/52 E (23,720, 35° 31′ 09″, 77° 12′ 46″) is almost certainly the same as Mason's 23,710, 35° 31′ 12″, 77° 12′ 47″, shown above. Mason was unable to identify his Pk. 16²/52 E (23,680, 35° 31′ 08″, 77° 12′ 40″), probably a minor point on the Apsarasas III ridge, which extends westwards to 23,580 and eastwards to 23,570.

The Apsarasas ridge was named by Grant Peterkin. We recommend the adoption of the names Apsarasas I, II, and III.

(e) *Kyagar group*, a high group between the Singhi and Kyagar glaciers, surveyed by Mason in 1926. The summits listed below are from the detailed stereographic survey map of the Shaksgam glacier in *Geogr. J.*, October 1927.

The group extends further northwards with several summits above 20,000 feet. It was not surveyed on the Spoleto expedition of 1929, but the western side of it was probably surveyed during the Visser expedition in 1934.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
Kyagar I	21,770	35° 34′ 43″	77° 08′ 48″	
Kyagar II	21,340	35 35 47	77 07 45	
—	21,110	35 36 25	77 07 20	
—	21,170	35 36 50	77 06 51	

(f) *Teram Shehr group*, at the head of the Teram Shehr glacier, east of the main trunk of the Kyagar glacier and north of the Central Rimo glacier. It comprises a rather miscellaneous collection of mountains, which have been mainly triangulated by Wood and Alessio on De Filippi's expedition of 1914.

—	22,480	35° 29′ 48″	77° 14′ 39″	(Peterkin 30)
("Highest pt. of snow ridge")	22,380	35 28 52	77 16 36	Pk. 34/52 E, Wood
("S.W. end of southern of two flat-topped hills")	21,410	35 36 37	77 25 59	Pk. 30/52 E, Wood
—	21,650	35 31 38	77 20 31	20r/52 E, Alessio
—	*21,865*	*35 29 30*	*77 22 00*	De Filippi map
("Rock pinnacle on peak. Cliffs on south side") ..	21,910	35 28 18	77 23 46	Pk. 35/52 E, Wood

Peak 22,480, which was first triangulated by Grant Peterkin during the Workman Expedition of 1912, is also shown on De Filippi's map, though it has not been entered in the Survey of India's triangulation pamphlets. Peak 34/52 E, 22,380, triangulated by Wood on De Filippi's expedition, 1914, is shown on De Filippi's map as 22,410; while Wood's Pk. 36/52 E (22,090, 35° 28′ 17″, 77° 18′ 22″), entered by Wood as a "rock pinnacle" in his lists, is not shown on De Filippi's map, its place being taken by a much lower summit, 20,745. No rock pinnacle appears here in photographs.

(F) *Rimo Muztagh:* Map 52 E.

(a) *Rimo group*, a complex group along the watershed between the Rimo glacier and the head of the Teram Shehr, and throwing out a long ridge between the two main Rimo glaciers eastwards.

De Filippi's map, published with the English edition of his book ('Himalaya,

Karakoram and Eastern Turkestan'), shows a large number of heights. In the lists below only the most important are given, from an examination of the topography. Where possible, the triangulated positions and heights have been given, and where these differ from those shown on De Filippi's map a note has been made to that effect. A few points have also been derived from Collins' triangulation of 1911, and from Visser's map made during his 1929–30 expedition.

The group extends eastwards of Peak 48 between the Central and South Rimo glaciers, and south-eastwards of Peak 53 between the South Rimo and Shelkar Chorten glaciers.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
—	22,512	35° 23′ 58″	77° 19′ 01″	Pk. 46/52 E (Collins) Shown on De Filippi's map as 22,515
—	*22,569*	*35 23 26*	*77 16 25*	Visser, 1929–30
("sharp cone at S. end")	23,730	35 22 32	77 21 38	Pk. 49/52 E (Wood). De Filippi and Visser both show Wood's height
—	24,188	35 21 24	77 22 15	[1] Pk. 50/52 E (Collins)
("southern of twin peaks")	24,230	35 21 22	77 22 09	[1] Pk. 51/52 E (Wood)
("centre of triple peak")	23,520	35 22 38	77 23 04	Pk. 48/52 E (Wood) (shown correctly on De Filippi)
("rounded")	22,460	35 23 09	77 23 15	Pk. 47/52 E (Wood) (shown correctly on De Filippi)
("cone-shaped") ..	22,560	35 23 38	77 23 19	(Pk. 173/52 E (Wood) (shown on De Filippi's map as 22,580)
("southern and highest point")	22,240	35 24 52	77 22 45	[2] Pk. 45/52 E (Wood)
("northern end") ..	22,180	35 24 57	77 23 03	[2] Pk. 44/52 E (Wood)

[1] There is a difficulty with these two peaks. From the above two sets of data it would appear that Peak 50 is N.E. of Peak 51, and Visser's map shows them as correctly identified. On the other hand, De Filippi shows twin peaks, roughly in the same position, of which one, with a height of 24,250, is N.W. of the other, 24,240. We have preferred the evidence of Wood, Collins, and Visser.

[2] These two points appear to be at the extremities of a north–south ridge. On De Filippi's map the southern is marked 22,240, the northern 22,150.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
("S.W. summit of double peak")	21,840	35° 19′ 46″	77° 23′ 00″	Pk. 52/52 E (Wood) (shown on De Filippi's map as 21,810)
("snow peak")	22,300	35 18 48	77 22 07	[1] Pk. 53/52 E (Wood)

(b) *North Terong group*, between the main trunk of the Siachen glacier, the Teram Shehr, and the North Terong glacier.

(Siachen No. 32) ..	21,860	35° 27′ 29″	77° 07′ 55″	Peterkin, 1912
(„ „ 31) ..	22,910	35 27 36	77 10 49	Peterkin Pk. 17/52 E
("round-topped cone") ..	22,570	35 27 46	77 10 29	Wood, 1914, Pk. 164/52 E
(Siachen No. 33) ..	21,580	35 24 39	77 11 30	Peterkin, 1912
—	*21,636*	*35 18 30*	*77 17 30*	Visser 1929–30
—	*21,178*	*35 17 30*	*77 15 30*	„ „
—	*21,245*	*35 16 30*	*77 18 00*	„ „

It seems likely that Peaks 17 and 164 are points on the same massif, and possibly the same peaks, the first being observed by Peterkin from the west in 1912, the second by Wood from the east in 1914. The Workmans named Peak 17 "Mt. Lakshmi," which we consider unsuitable.

(c) *South Terong group*, between the Nubra valley, the South Terong glacier, and the Mamostong glacier. No peaks have been triangulated and the three noted below are from the Visser expedition of 1929–30.

—	*20,119*	*35° 12′ 00″*	*77° 19′ 30″*	—
—	*20,600*	*35 10 30*	*77 20 00*	—
—	*22,224*	*35 09 00*	*77 23 30*	—

(d) *Shelkar group*, a group between the right bank of the Shelkar Chorten glacier and the South Rimo glacier. The existing map 52 E is inaccurate on the west side of the watershed, the detail being best shown on the map of the Visser Expedition 1929–30.

("rocky peak at W. end of ridge")	21,120	35° 14′ 40″	77° 30′ 26″	Pk. 185/52 E (Wood)
("cone at E. end of ridge")	21,180	35 14 33	77 30 57	Pk. 186/52 E (Wood)
("rounded top of cone")	21,420	35 17 12	77 32 26	Pk. 107/52 E (Wood) (shown on De Filippi's map as 21,395)

(e) *Kumdan group*, an extensive group comprising the mountains on the right bank of the Upper Shyok as far south as the Saser pass, and east of the main trunk of the Mamostong glacier; the group is drained eastwards by the Chong Kumdan, Kichik Kumdan, and Aktash glaciers.

[1] De Filippi's and Visser's maps both give 22,300. The Survey of India map 52 E incorrectly shows 22,230.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
("black rock on top of snow peak")	22,980	35° 11′ 57″	77° 32′ 30″	Pk. 110/52 E (Wood)
("snow peak")	23,200	35 11 41	77 35 14	Pk. 111/52 E (Wood)
—	*21,360*	*35 15 15*	*77 37 45*	—
("highest point of snow ridge")	21,730	35 14 45	77 38 13	Pk. 109/52 E (Wood)
—	*21,035*	*35 14 35*	*77 38 25*	—
—	*21,170*	*35 13 20*	*77 40 00*	—
("snow peak")	22,040	35 09 19	77 33 47	Pk. 112/52 E (Wood)
Mamostong Kangri ..	24,690	35 08 54	77 34 41	Pk. 12/52 E (before 1860)
("black rock on summit")	24,660	35 08 34	77 34 45	Pk. 113/52 E (Wood)
("summit snow peak") ..	22,520	35 08 51	77 37 26	Pk. 187/52 E (Wood)
("rounded snow peak") ..	21,820	35 07 51	77 38 37	Pk. 188/52 E (Wood)
—	23,020	35 04 43	77 38 20	Pk. 114/52 E (Collins)
—	22,133	35 03 23	77 39 22	Pk. 115/52 E (Collins)
("snow peak")	22,110	35 05 19	77 40 45	Pk. 189/52 E (Wood)

The first two listed above are not shown on De Filippi's map, but are shown on Visser's. The extreme south of De Filippi's map is not very accurate, and the topographical points should be treated with some doubt; it was only sketched from a distance. The mountains at the head of the Mamostong glacier were first explored at close range by Dr. A. Neve.

The spelling *Mamostong*, which means "the thousand demons," is, we believe, more correct than the old spelling *Murghistang*. The name "Mamostong" recalls a legend in which a number of raiders from Central Asia were destroyed by an avalanche (*Rec. Surv. of India*, vol. 22, p. 172). The chief peak, whose height was determined by Johnson during the early Kashmir survey prior to 1860 as 24,690, was refixed by Wood on De Filippi's expedition (24,660). It was likened by Dr. A. Neve to "a crouching lion." We suggest the name *Mamostong Kangri* for it.

The mountains at the head of the Aktash glaciers north of the Saser pass are not yet well enough known to be given names. Peaks 114 and 115, fixed by Collins, were not refixed by Wood in 1914, but are shown on the map illustrating his work. On De Filippi's map however they are given the heights 22,200 and 22,130, instead of 23,020 and 22,133. Neither De Filippi's nor Wood's maps are reliable in this region, the Aktash glaciers being omitted.

(G) *Saser Muztagh:* Maps 52 F, 52 J.

(a) *Saser group*, a great group south of the Saser pass, some of the peaks of which were triangulated before 1860. The group was not surveyed in detail during the early surveys of Kashmir by Mr. E. C. Ryall, and it was not till

Dr. Arthur Neve visited the Sa-kang and Phukpo-che glaciers that any details were known (Popoche, Neve, 'Thirty Years in Kashmir,' pp. 227–35). It was subsequently surveyed in detail by the Vissers in 1929, and the peaks whose coordinates are shown in italics are from that survey.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
—	*21,795*	*34° 54′ 38″*	*77° 41′ 55″*	—
—	24,330	34 52 25	77 44 15	Pk. 48/52 F (Wood)
Saser Kangri [1]	25,170	34 52 02	77 45 13	Pk. 29/52 F (before 1860)
	(25,280	34 52 00	77 45 13	Wood)
—	24,590	34 50 31	77 47 16	Pk. 30/52 F (before 1860)
—	*(21,000)* [2]	*34 50 35*	*77 45 08*	—
—	*21,285*	*34 54 10*	*77 46 40*	—
—	*21,855*	*34 54 00*	*77 48 00*	—
Tughmo Zarpo [3]	*21,648*	*34 51 55*	*77 49 13*	—
—	?	*34 51 07*	*77 50 40*	—
—	*22,155*	*34 50 15*	*77 52 05*	—
—	24,650	34 48 14	77 48 22	Pk. 31/52 F (before 1860)
—	*22,777*	*34 48 09*	*77 46 25*	—

(b) *Chhushku group*, at the head of the Sultan Chhushku and other lesser glaciers draining into the upper Shyok above Kataklik. With one exception, all the peaks are given data derived from measurement from Visser's map, while some of the heights (shown in brackets) are from an examination of the contours. They are only given for the purposes of identification, and should not be accepted.

—	*?(22,250)*	*34° 52′ 35″*	*77° 52′ 50″*	—
—	*?(21,250)*	*34 52 50*	*77 55 02*	—
—	*?(21,750)*	*34 52 30*	*77 55 40*	—
—	*?(21,750)*	*34 51 55*	*77 56 20*	—
—	*?(22,000)*	*34 51 30*	*77 57 02*	—
—	*?(21,250)*	*34 52 28*	*77 57 20*	—
—	21,920	34 54 34	77 56 05	Pk. 28/52 F (before 1860)

(c) *Shukpa Kunchang group*, a high group between the two Shukpa Kunchang glaciers. The heights of all the summits are doubtful, and the positions from Visser's map by measurement.

—	*?(22,000)*	*34° 46′ 52″*	*77° 51′ 40″*	—
—	*?(22,000)*	34 45 33	77 50 21	Pk. 32/52 F (before 1860, but no height)
—	*?(22,250)*	*34 44 58*	*77 52 42*	—
—	*?(22,000)*	*34 44 32*	*77 53 37*	—

[1] Saser means "yellow ground." From Saser Brangsa the name has gone to the Saser pass, and then to the peak. Sasir is incorrect. We suggest *Saser Kangri* as preferable to Sasir Peak.

[2] This point, about 21,000 feet, was climbed by Dr. Neve and named "Panamik Peak," not very suitably.

[3] We suggest this name from the glacier draining it.

(d) *Arganglas group*, provisionally named from a grazing ground at the junction of the two glaciers draining it.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
—	?21,932	34° 36′ 52″	77° 50′ 55″	—
—	22,272	34 35 07	77 54 19	Pk. 47/52 F (Collins)

(e) *Kunzang group*, provisionally so named from the Kunzang Lungpa draining eastwards into the upper Shyok. No details are available for us to work out this group. It was surveyed by Visser in 1934.

(f) *Shyok group*, the last group of the Great Karakoram, in the bend of the Shyok river and opposite the village of Shyok. The peaks listed are all from the Changchenmo triangulation done by Johnson and Clarke in 1862. The heights of only two peaks were determined, but those of the others should be available from Visser's survey of 1934, the details of which are not yet available to us.

—	—	34° 20′ 03″	78° 10′ 08″	Pk. 3/52 J
—	—	34 18 56	78 09 26	Pk. 4/52 J
—	21,070	34 18 20	78 13 07	Pk. 5/52 J
—	21,100	34 17 55	78 11 37	Pk. 6/52 J
—	—	34 17 25	78 10 15	Pk. 7/52 J
—	—	34 15 54	78 12 33	Pk. 8/52 J
—	—	34 15 23	78 11 30	Pk. 9/52 J

APPENDIX II: MOUNTAIN GROUPS OF THE LESSER KARAKORAM

Groups North of the Great Karakoram in Hunza

A (i) *Lupghar group* (42 L). This group lies between the Batura glacier, the Chapursan, and the Hunza river. It is believed that no mountains in the group rise above 20,000 feet, but there are several snow-clad summits over 19,000 feet.

A (ii) *The Ghujerab mountains* (42 P). Two groups may be recognized in the mountains of Ghujerab, viz. the Chapchingal group and the Karun Kuh group.

(a) *The Chapchingal group* lies between the Kuksel and Chapchingal tributaries of the Khunjerab and Ghujerab rivers respectively, and on both sides of the Chapchingal pass. No peaks have been triangulated, but the following three are shown on the Survey of India map 42 P. They are from K. S. Afraz Gul's survey with the Visser expedition, 1925. We suggest the name *Chapchingal Sar* for the highest.

Chapchingal Sar	21,210	36° 45′ 36″	37° 18′ 05″	—
—	20,730	36 43 05	37 23 55	—
—	20,070	36 42 50	37 28 55	—

(b) *The Karun Kuh group* lies between the lower Ghujerab and the lower Shimshal valleys, of which the culminating summit is the mountain known as Karun Kun, about 6 miles north-east of the Karun Pir (pass), which has been fixed by triangulation, during the Indo-Russian work, 1912–13.

Purzin-wa-dasht	20,786	36° 39′ 10″	75° 06′ 30″	—
Karun Kuh	22,891	36 36 47	75 04 48	Pk. 19/42 P
—	20,147	36 34 30	75 11 30	

Groups South of the Great Karakoram

(B) The Rakaposhi range may be divided into five groups, of which something is known at present, though it cannot be said that we have anything more than rough maps, except in the Bagrot and Haramosh valleys, which the Survey of India mapped in 1931. In 1892 Conway made a plane-table sketch of the Hispar glacier, but the side valleys were extremely roughly sketched, and it is uncertain whether he correctly identified the few triangulated summits of the Survey of India. The Workmans made two expeditions, one to the Chogo Lungma glacier in 1902, and the other to the Hispar in 1909, and with each record of their journeys they published large-scale maps. Unfortunately, here again they seem to have had great difficulty in recognizing fixed points, owing to faulty initial azimuths and base measurement; it is extremely difficult to fit their work in with the work of others, and their heights must remain in doubt. Where possible the names given by these travellers have been entered for the purposes of identification and their approximate positions on the Survey of India map given in order to place them in relation to the general topography of the sheet.

The five groups are the Rakaposhi group, the Bagrot group, the Phuparash group, the Chogo Lungma group, and the Hispar Wall.

(a) The *Rakaposhi group*, on the extreme western end of range, rising steeply from the Hunza gorge at Chaichar Parri. Only one summit of the Rakaposhi massif has been triangulated, and the heights of subsidiary summits are not known.

For a note on the name "Rakaposhi," see Burrard, 2nd Ed., vol. 1, p. 50. The name Rakaposhi should most certainly be retained, with the Hunza name, Dumani, as well. The peak was triangulated during the Kashmir triangulation of 1855–60, and is well fixed.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
Rakaposhi, or Dumani ..	25,550	36° 08′ 39″	74° 29′ 22″	Pk. 27/42 L

(b) The *Bagrot group*. This group lies at the head of the two main tributary glaciers of the Bagrot valley, the Hinarche and Burche (called the Bagrot and Gargo glaciers on Conway's map). Conway only gives the height of one (the "Dome of Dirran"), but the "Crown of Dirran" is probably higher. The four given below are certainly over 21,000 feet.

("Crown of Dirran") ..	—	36° 07′ 14″	74° 39′ 44″	Pk. 37/42 L (Kashmir triangulation 1855–60. No height)
("Dome of Dirran") ..	23,550	36° 06′ 50″	74° 38′ 45″	Conway, 1892
("Burchi Peak") ..	—	36 06 50	74 40 30	Conway, 1892
("Lower Burchi Peak") ..	—	36 06 00	74 41 00	Conway, 1892

Perhaps it is yet too early to consider names for these, though we would suggest Diran I and Diran II for the first two, and Burche I and Burche II for the two last. Burche is probably a better spelling than Burchi. Reference should however be made to the Survey of India work of 1931, which is not available to us.

(c) The *Phuparash group*.[1] An important group at the head of the Phuparash

[1] The work of the Survey of India of 1931 in sheet 42 L is not available in England, and the suitability of this group name requires confirmation after consulting that survey.

valley, four peaks of which were fixed by the triangulators in 1855–60. Conway calls the first and westernmost "Emerald Peak," and saw it from the Bagrot valley; the second and third he does not name and may not have seen, though they are marked on his map. The last, which he names "Saddle Peak," he saw from the glacier he calls the Shallihuru. The topography at the head of this glacier and its neighbour to the east is entirely different from that shown at the head of the Chogo Lungma glacier by the Workmans. In compiling map 42 L the best fit possible has been made, but it is very probably inaccurate. On that map Conway's Shallihuru is given as Miar (Shalhubu) glacier, probably from K. S. Afraz Gul's plane-table with the Vissers in 1925.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
("Emerald Peak") ..	22,390	36° 03′ 29″	74° 45′ 57″	Pk. 42/42 L
—	22,260	36 03 03	74 46 15	Pk. 43/42 L
—	21,570	36 02 52	74 49 31	Pk. 44/42 L
("Saddle Peak")	21,570	36 02 42	74 47 26	Pk. 45/42 L

The Haramosh range branches south-eastwards from the Rakaposhi range about 2 miles east of "Saddle peak."

(d) *The Chogo Lungma group.* This group lies mainly at the head of the Chogo Lungma glacier and at the head of the Yengutz Har glacier. The Chogo Lungma was ascended by the Workmans and described by them in 'Ice-bound heights of the Mustagh.' On the north the Yengutz Har glacier was surveyed by K. S. Afraz Gul with the Vissers in 1925. It is extremely difficult to reconcile the topography as shown by the Workmans with either that of K. S. Afraz Gul on the north or with that of the Survey of India in Sheet 43 I on the west, and the three summits listed below from the Workmans' work should be treated with considerable reserve. It is unlikely that a peak as high as 24,500 feet exists here, while from the illustrations in their book, the two summits which they named "Mount Chogo" and "Mount Lungma," and which they climbed, are little more than snow knolls on the south-east ridge of "Pyramid Peak."

Chogo Lungma, which is applied to the glacier and valley to the south-east, merely means "the large valley." To call two summits towards the head of the valley "Mt. Chogo" and "Mt. Lungma," *i.e.* "Mount Large" and "Mount Valley," seems to us particularly unsuitable, and we suggest that the names be dropped and the summits left unnamed until the regular survey or next explorer finds or suggests more suitable names.

The peak at the head of the Yengutz Har glacier, for which we suggest the name *Yengutz Har*, seems to fall roughly in the position of the ridge shown on Conway's map as "the Golden Parri" (*i.e.* Golden Cliff, or "Ghenish Chish"), but Conway's topography here is unrecognizable on the modern survey. The name for this glacier was first obtained by Sir Henry Hayden when examining glaciers in the neighbourhood about 1906; it was then spelt *Yengutsa*. Gilgit officials who later visited it stated that the correct spelling should be *Yengutz Har*, and this name is now in general use in glacier literature.

("Pyramid Peak") ..	*24,500?*	*36° 03′ 15″*	*74° 54′ 30″*	—
("Mt. Lungma") ..	*22,568?*	*36 02 20*	*74 55 00*	—
("Mt. Chogo")	*21,500?*	*36 02 03*	*74 55 30*	—
Yengutz Har	23,056	36 03 28	74 58 00	Pk. 68/42 L

(e) *The Hispar Wall.* All along the southern side of the Hispar glacier there is a mountain wall, from which, on the west, a series of short glaciers descends to the Hispar. The wall was crossed at one place by Bruce in 1892, the pass being known by the name "Nushik La" (36° 01′ 30″, 75° 14′ 25″).

No summits have been triangulated along this wall, and the points noted below are either from K. S. Afraz Gul's plane-table on the Visser Expedition of 1925 or from the Workmans' map in 'The call of the snowy Hispar.' In view of the fact that the Workmans failed to recognize the Survey of India triangulated points, the positions and heights of the points from their map should be treated with reserve.

The names for the first three summits are from the glaciers draining northwards from them, and are from K. S. Afraz Gul's work. Makorum is presumably the same as the point marked 23,635 on the Workmans' map.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
Gurpaltig	*20,700*	*36° 05′ 28″*	*75° 01′ 02″*	(Afraz Gul)
Chandershish	*22,300*	*36 03 06*	*75 04 45*	(Afraz Gul)
Makorum	*23,750*	*36 03 25*	*75 07 04*	(Afraz Gul)
—	*22,508*	*36 01 35*	*75 24 35*	(Workman)
—	*22,710*	*36 01 26*	*75 31 05*	(Workman)
—	*21,358*	*36 01 04*	*75 34 27*	(Workman)
—	*22,060*	*36 00 52*	*75 36 02*	(Workman)

Subsidiary groups associated with the Rakaposhi range

(f) *The Ganchen group*, between the Hoh Lumba and the Basha river. Very little is known about this region and it has not been surveyed in detail. One summit only, Ganchen, 21,200 feet, has been fixed by triangulation. In 'Ice-bound heights of the Mustagh,' pp. 54, 58, the Workmans show photographs of some of the peaks of the group further north, one of which, which they call *Hikmul*, may be as high as Ganchen. They explored a small glacier west of Ganchen.

Ganchen	21,200	35° 48′ 36″	75° 29′ 11″	Pk. 9/43 M, 1855–60

(g) *The Meru group*, between the Hoh Lumba and the Biafo glacier. There is undoubtedly a high group here, but nothing is known of it. During the old survey no peaks were triangulated in the group, and Conway fixed none. The Workmans named a high peak *Meru*, and assigned an approximate height of 22,000 feet to it; this is probably too high. An illustration of part of Meru appears in *Himalayan Journal*, vol. vi, 1934, p. 71.

(C) *The Haramosh Range*. Little is known about the detailed topography of this range. A few of the higher summits towards the north of it have been fixed by triangulation, but it is too early yet to attempt a classification of groups. It seems to us probable that the Workmans never properly identified Haramosh when they explored the head of the Chogo Lungma glacier, and therefore their representation of the topography in that region is very probably at fault. Certainly it is impossible to fit it in with the modern Survey of India work west of that mountain. No details are known of the heights of the range south-east of Pk. 1/43 M, and it seems likely that none rises above 21,000 feet. The peaks above 20,000 feet in the range which have been triangulated are given below.

The height of Peak 59 was not fixed during the triangulation. It has subsequently been found to be approximately 20,190 feet. Pk. 60/43 I (35° 46′ 02″, 74° 58′ 02″) falls in the same category, but as its height was found subsequently to be approximately 19,850 feet, it is not listed. The Workmans add another peak with a height of 21,930, but it would be unsafe to assume it to be correct.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*	
—	24,470	36° 00′ 14″	74° 52′ 34″	Pk. 46/42 L	
—	22,810	35 57 26	74 57 47	Pk. 56/43 I	
—	21,930	35 51 40	74 57 54	Pk. 57/43 I	1855–60
Haramosh	24,270	35 50 29	74 53 52	Pk. 58/43 I	
—	*20,190*	35 47 45	74 57 12	Pk. 59/43 I	
—	20,740	35 52 00	75 03 28	Pk. 1/43 M	

(D) *The Masherbrum Range*. The range extends from the junction of the Basha and Braldu rivers, south of the Baltoro glacier, as far east as the Chogolisa Saddle, east of Chogolisa or " Bride Peak." It is not known in detail throughout its length, but certain well-marked groups can be distinguished.

(a) *The Koser Gunge group*, on the extreme west as far as the Skoro La.[1] The height of only one summit is known with any degree of accuracy, and this has not been triangulated.

Koser Gunge .. .. *21,000* *35° 37′ 10″* *75° 39′ 00″* —

(b) *The Mango Gusor group*, lying immediately east of the Skoro La. Its eastern boundary cannot yet be determined.

Mango Gusor .. .. 20,630 35° 34′ 41″ 75° 55′ 14″ Pk. 21/43 M, 1855–60

No topographical details are known of the range east of Mango Gusor until the Masherbrum group is reached.

(c) *The Masherbrum group*. Little is known of the Masherbrum group. Every expedition up the Baltoro seems to have passed it by. In the Survey of India Records there are two summits triangulated, both over 25,000 feet, from the south. The early survey carried out from the south was very sketchy in the higher valleys of the Hushe valley. Mr. J. A. Sillem in 1903 explored the Hushe valley from the south, but left no account of his work, and died soon afterwards (*H. J.*, vii, 1935, p. 66). The Workmans in 1911 made some minor corrections to the topography and reached the watershed both east and west of Masherbrum, but added little to our knowledge of the massif. A number of illustrations showing Masherbrum from the north have been published by various travellers, which make its outline well known from that direction (*e.g. H. J.*, vii, 1935, p. 142). Other aspects of the mountain appear in the Workmans' book, 'Two summers in the ice-wilds of the Eastern Karakoram,' pp. 84, 98.

Masherbrum E. .. .. 25,660 35° 38′ 36″ 76° 18′ 31″ Pk. 7/52 A
Masherbrum W. .. 25,610 35 38 29 76 18 23 Pk. 8/52 A

(d) *The Chogolisa group*. No further details of the topography of the range are known until the head of the Kondus valley is reached. We then come upon a group which has been explored in considerable detail by the expedition of the Duke of the Abruzzi in 1909. To this the name "Chogolisa group" has been suggested by the Workmans on the south, and this name seems suitable.

("Mitre Peak") .. .. *20,462* *35° 42′ 50″* *76° 29′ 50″* Abruzzi
35 43 30 *76 30 15* Spoleto
— *21,896* *35 39 10* *76 33 10* Abruzzi and Spoleto
— *22,477* *35 38 10* *76 32 30* Abruzzi and Spoleto

[1] For a brief history of the Skoro La and a discussion on its height, see *Himalayan Journal*, vol. i, 1929, p. 89. For an illustration of it, see *ibid.*, vol. vi, 1934, p. 70.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
Chogolisa II	24,783	35° 36′ 45″	76° 34′ 00″	Pk. 24/52 A, Abruzzi
Chogolisa I ("Bride Peak")	25,110	35 36 44	76 34 23	Pk. 25/52 A, 1855–60 Survey of India
—	*21,653*	*35 36 20*	*76 38 50*	Abruzzi
Baltoro Kangri ("Golden Throne")	*23,990*	*35 38 50*	*76 40 00*	Abruzzi

The positions of "Mitre Peak" as given by Abruzzi and Spoleto do not agree with each other; both positions have been given in the table above. "Mitre Peak" is a very striking rock peak named first by Conway, and separated from the rest of the Chogolisa group by the "Vigne glacier."

The height of "Golden Throne" is in doubt. Conway and Abruzzi gave no height for it; Spoleto's height is given above; on the Survey of India map it is shown as 23,600 feet, but I do not know the source, since the peak has not been triangulated nor surveyed by the Survey of India. Dyhrenfurth accepted 23,990 feet, and basing his calculations on this, claimed that "Queen Mary" was over 25,000 feet, whereas its triangulated height is 24,350 feet. It seems therefore possible that the height 23,990 feet for "Golden Throne" is too high. The summit is of snow and not sharply defined (see *Himalayan Journal*, vol. vii, 1935, pp. 144–8).

The best illustrations so far published of the group are Panoramas C, D, and O, in De Filippi's 'Karakoram and Western Himalaya,' the account of Abruzzi's 1909 expedition.

We recommend that the names "Mitre Peak," "Golden Throne," and "Bride Peak," which were given by Conway and never accepted officially, be dropped; that until the position of the first is known with greater accuracy it be left unnamed on Survey of India maps; that the name *Baltoro Kangri* for the "Golden Throne" at the head of the Baltoro glacier be adopted; and that Chogolisa be retained for "Bride Peak."

Subsidiary groups associated with the Masherbrum range

Little is known of the detailed topography of the two groups lying between the Thalle and Hushe valleys and between the Hushe and Kondus valleys, which may be given group names at a later stage. The Survey of India has not surveyed the groups in detail, and no explorer that we know of has produced any useful topographical work. Survey of India maps therefore only show a very few isolated triangulated peaks, which are given below. All three were triangulated from the Kashmir series between the years 1855 and 1860.

(e) *Group east of Thalle valley.*

—	21,190	35° 26′ 40″	76° 12′ 53″	Pk. 1/52 A, 1855–60

(f) *Group east of Hushe valley.*

—	22,750	35° 27′ 45″	76° 34′ 44″	Pk. 26/52 A
—	23,890	35 25 08	76 33 12	Pk. 27/52 A

(E) *The Saltoro Range*

A certain amount of detail is known about the various groups of the Saltoro, owing to the interest taken by explorers of the Siachen. Longstaff crossed the Saltoro pass, or Bilafond La, on to the Siachen glacier in 1909. He also carried

out some plane-tabling among the mountains south of that pass. His account, with a small-scale map from his material, appeared in *Geogr. J.* 35 (1910) 622–657, map p. 744. The Workmans followed in 1912, and their surveyor, Grant Peterkin, carried out additional triangulation and plane-table survey. The Workmans themselves crossed from the head of the Siachen to the Kondus by the Sia La. In 1935 John Hunt and James Waller made an attempt to climb the peak shown below as "Saltoro Kangri I" (*Himalayan Journal*, vol. viii, 1936, pp. 14–24). The Workmans' maps are published in *Geogr. J.* 43 (1914) 232, and in their book 'Two summers in the ice-wilds of the Eastern Karakoram.'

(a) *The Kondus group*, from the Sia La to the saddle between the Kondus glacier and the glacier called by the Workmans the "Peak 36 glacier."

All the summits listed below were triangulated by Grant Peterkin on the Workmans' 1912 expedition.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
("Lower Silver Throne") (Peterkin, Siachen No. 14)	20,230	35° 34′ 55″	76° 46′ 38″	Pk. 46/52 A
("Silver Throne") (Peterkin, Siachen No. 13) ..	—	35 33 47	76 45 36	Pk. 47/52 A
("The Hawk") (Peterkin, Siachen No. 10) ..	22,160	35 32 58	76 52 10	Pk. 48/52 A
("Mt. Ghent II") (Peterkin, Siachen No. 9) ..	24,090	35 31 44	76 48 33	Pk. 50[1]/52 A
("Mt. Ghent I") (Peterkin, Siachen No. 8) ..	24,280	35 31 06	76 48 07	Pk. 50[2]/52 A
(Peterkin, Siachen No. 7)	21,610	35 29 41	76 52 59	Pk. 51/52 A

The above names, given by the Workmans, have not come into general use. It is therefore not too late to give them more suitable names when the next traveller goes there. We recommend that the Workmans' names should not be adopted.

(b) *The Saltoro group*, from the above group southwards as far as the Saltoro pass, including the Bilafond Wall. There seems to be some slight discrepancy between the positions found for the two high peaks of this group by the earlier triangulation and by Collins' triangulation in 1911. There is no doubt that the summit shown in the Survey of India triangulation pamphlets as Pk. 53/52 A is the same as Pk. 35/52 A, and that Pk. 54/52 A is the same as Pk. 36/52 A. It seems essential that names should be given to these peaks, as confusion is already occurring, through some authors calling the peaks K^{36} and K^{35}, while others call them Peak 36 and Peak 35.

Photographs of various aspects of the Saltoro Kangri are published in the Workmans' 'Two summers in the ice-wilds of the Eastern Himalaya,' p. 174; in *Himalayan Journal*, vols. iv, 1932, p. 46; viii, 1936, pp. 16, 17, 20.

Sherpi Kangri	23,960	35° 27′ 54″	76° 47′ 07″	Pk. 33/52 A, 1855–60
Saltoro Kangri II ..	25,280	35 24 24	76 50 50	Pk. 35/52 A, 1855–60
—	25,136	35 24 30	76 50 51	Pk. 53/52 A, Collins
Saltoro Kangri I ..	25,400	35 24 01	76 50 55	Pk. 36/52 A, 1855–60
—	25,321	35 24 05	76 50 57	Pk. 54/52 A, Collins

Sherpi-gang means literally "the ice of Sherpi," *gang* being the form used instead of *Kang* in western Ladakhi dialect. It might be more consistent to use the form Sherpikang for the glacier, and Sherpi Kangri for the mountain at its head.

(c) *The Chumik group*, from the Saltoro pass to the Rgyong La. Little is known of the group in detail, though Longstaff carried out a rapid reconnaissance of it from the west in 1909. Peaks 8/52 E (1855–60) and 18/52 E (Collins) may be the same, and it is probable that Collins' value is the better, for Longstaff remarks: ". . . K^{12}, an elusive peak which I was never able to identify to my entire satisfaction." K^{12} is the old designation of Pk. 8/52 E.

Grant Peterkin observed two peaks of the group nearer to the Siachen in 1912, and it is possible that the Vissers may have added to our knowledge of this group in 1934.

The last two peaks, unlike the rest of Peterkin's work, have not been included in the Survey of India pamphlets.

Name	*Height*	*Lat.*	*Long.*	*Peak No. and map*
("K^{12}")	24,370	35° 17′ 46″	77° 01′ 23″	Pk. 8/52 E, 1855–60
—	24,503	35 18 13	77 00 55	Pk. 18/52 E, Collins
—	22,158	35 12 40	76 59 33	Pk. 55/52 A, Collins
—	20,460	35 22 04	77 04 47	Peterkin, 1912
—	20,180	35 20 33	77 08 14	Peterkin, 1912

(d) *The Dansam group*, a group about which very little is known between the Kondus and the Gyari valleys. One peak only has been triangulated, for which the name Dansam is suggested. It is the old K^{13}.

Dansam (K^{13})	21,870	35° 12′ 12″	76° 45′ 41″	Pk. 38/52 A, 1855–60

(e) *The Chulung group*, from the Rgyong La to the end of the range. It is a high group between the Nubra and the Lower Shyok, and it is possible that the Vissers have added to our knowledge of the topography, though we have no details. It is possible that this group should be divided into two parts, the first four being included in a northern group and the last three in a southern group.

(K^{19}) Gharkun	21,720	35° 05′ 05″	76° 58′ 09″	Pk. 39/52 A, 1855–60
—	20,960	35 01 30	77 00 29	Pk. 10/52 E, 1855–60
(D^{22})	22,400	35 01 33	77 08 58	Pk. 9/52 E, 1855–60
—	21,601	34 59 42	77 17 31	Pk. 42/52 F, Collins, 1911
—	21,334	34 55 04	77 17 23	Pk. 43/52 F, Collins, 1911
—	20,213	34 46 07	77 25 16	Pk. 44/52 F, Collins, 1911
(K^{25})	21,400	34 54 37	77 08 43	Pk. 1/52 F, 1855–60

A certain number of other points were triangulated during the earlier survey and hill-staffs erected on them; their heights however do not seem to have been observed, and they therefore have not been included in the lists.

TWO TRANS-SAHARAN MOTOR ROUTES

H. E. SYMONS

DIRECT communication between the Mediterranean coast and Central Africa, *via* the Sahara, is possible by two routes. The more easterly, exploited by the Société Algérienne des Transports Tropicaux, starts from Algiers and passes through the Ahaggar mountains, its termini being Kano and Fort-Lamy, with an extension westward to Niamey. The western route, operated by the Compagnie Générale Transsaharienne, starts from Colomb Béchar, which is reached by railway from Oran or Algiers, and, roughly speaking, follows the meridian across the Tanezrouft to the Niger at Gao, whence it continues to Niamey.

On both routes hotels and depots have been built at convenient intervals and regular transport services are operated, accommodation being provided for passengers. The S.A.T.T. runs a weekly service as far as Tamanrasset in the heart of the Ahaggar mountains, and a fortnightly service beyond. The Transsaharienne services run once a week. The desert is virtually closed between the end of May and beginning of October and no public services run right across.

Because there is a regular transport service on each route, it must not be assumed that there are roads across the desert. There is merely a track which has been cleared of major obstacles and is marked, where possible, in an unmistakable fashion. Driving sand winds however may completely obscure the track between markers and, if these are far apart, it may be necessary to steer a compass course until the track once more becomes recognizable. As the track is not metalled or provided with any artificial surfacing, it quickly deteriorates and it is generally found more convenient to mark out a fresh track when the old one is worn out. Old tracks are generally shown as closed by the simple expedient of laying a row of stones across the entrance to them.

On both routes the tracks now in use may be expected to provide the hardest surface available in any particular region, but new and better ways are constantly being discovered and for this reason the mileage by either route may, between certain points, vary considerably in different years. Where the ground is hard gravel the heavy lorries, used for the regular transport services, have rolled the track into a series of corrugations, which provide extremely uncomfortable running for a private car. When large expanses of sand have to be crossed, the track may be a quarter of a mile wide or more, for each driver seeks to avoid the ruts made by others and makes his own way across the virgin sand to the right or left of the route. Where sandy wadis, or dried-up river beds, have to be crossed, the approaches have been eased off by working parties and causeways of stones or reeds provided.

On the Ahaggar route the track resembles a road wherever it passes over hard ground or through the mountains, for the larger stones have been moved to each side, clearly defining a highway of constant width. Where the track has been badly marked however there may be two or three parallel tracks made by drivers in search of better surfaces. At night it is unwise to follow any except the main track, however badly surfaced this may be. Across large

areas of sand or gravel the route is marked by cairns of stones or merely large upright single stones. Wadi crossings are generally marked at each end by very large cairns, 6 feet or so high. The westerly route, run by the C.G.T., is marked by white tin sheds situated every 10 kilometres, though many of these have been blown down and are indistinguishable at a distance. Unless therefore a sudden sandstorm arises the wheelmarks of other vehicles mark the route quite clearly.

On both routes isolated vehicles are not allowed to cross the desert if their drivers have not taken out a "breakdown contract" with the transport company concerned. In return for a certain fee, the transport companies undertake to send out to look for the traveller if he has not reached the next depot by a specified time. On the Ahaggar mountain route the cost of a breakdown contract between El Golea and Agadès is 400 francs one way, and 600 francs return. In addition, the motorist undertakes to pay at the rate of 2 frs. 80 per kilometre each way for the breakdown car, should it be sent out to look for him north of In Salah, and 3 frs. 60 per kilometre between In Salah and Agadès. Cars which do not weigh more than 22 cwt. can be towed by special vehicles, at double the rates. On the Tanezrouft route however the breakdown contract costs 300 frs. each way between Colomb Béchar and Gao, but anywhere between these points the services of the breakdown lorry have to be paid for at the rate of 5 frs. per kilometre each way; and furthermore, the traveller has to deposit a sum of 5000 frs. against the expense of possible rescue. No towing is undertaken.

The military authorities are held responsible for the proper observation of the regulations governing desert travel and they have to be satisfied that the motorist has the requisite breakdown contract. One should therefore report to the military authorities on arrival at and before leaving each depot or point *en route*.

The regulations require that all cars be fitted with balloon tyres and proper equipment for getting out of soft sand, such as planks, a shovel, wire-netting, matting or rope-ladders. A comprehensive kit of tools and a selection of spare parts likely to be needed must also be carried. Furthermore, eight days' rations and five gallons of water per passenger must be carried in addition to any water carried for topping up the radiator. Blankets or sleeping-bags must be taken in case of a breakdown causing a prolonged stay in the desert, where the temperature may often fall below freezing-point at night during the winter months.

On the Ahaggar route, bedding or food need only be carried in case of emergencies, as there are hotels or rest-houses and petrol depots at convenient intervals, never more than 300 miles apart. At Laghouat, Ghardaïa, and El Golea every comfort is provided, the remaining main depots being situated at In Salah, Arak, Tamanrasset, In Guezzam, Agadès, and Zinder. At Arak and In Guezzam it may occasionally be necessary for the traveller to rely on his own food supplies. Otherwise there are hotel conveniences and shower baths at each point. From Teguida-n-Teçum southwards there are also simple rest camps, in some cases partly furnished.

On the Tanezrouft line there are hotels as far as and including Reggan. At Bidon Cinq, 310 miles to the south, the present accommodation consists of

Huts of grass matting at Aguelock

Near the Grand Erg Occidental between Adrar and Beni Abbès

Driving through reeds in the wadi at In Amedjel

Rock causeway over the sandy bottom of a wadi between Aguelock and Kidal

Through the Ahaggar mountains south of Tamanrasset

Track cracked by heat west of Agadès

two disused motor-bus bodies mounted on empty oil drums, and each bus sleeps eight people on double berths. No food can be provided here, though water, if badly needed, can be purchased at the rate of 5 frs. per litre. It is proposed that the hundreds of large empty petrol drums which have been left at Bidon Cinq should be filled with sand and a proper rest-house constructed with them. There is also the likelihood of a wireless station being erected here, as there has been an aerial lighthouse since April 1935.

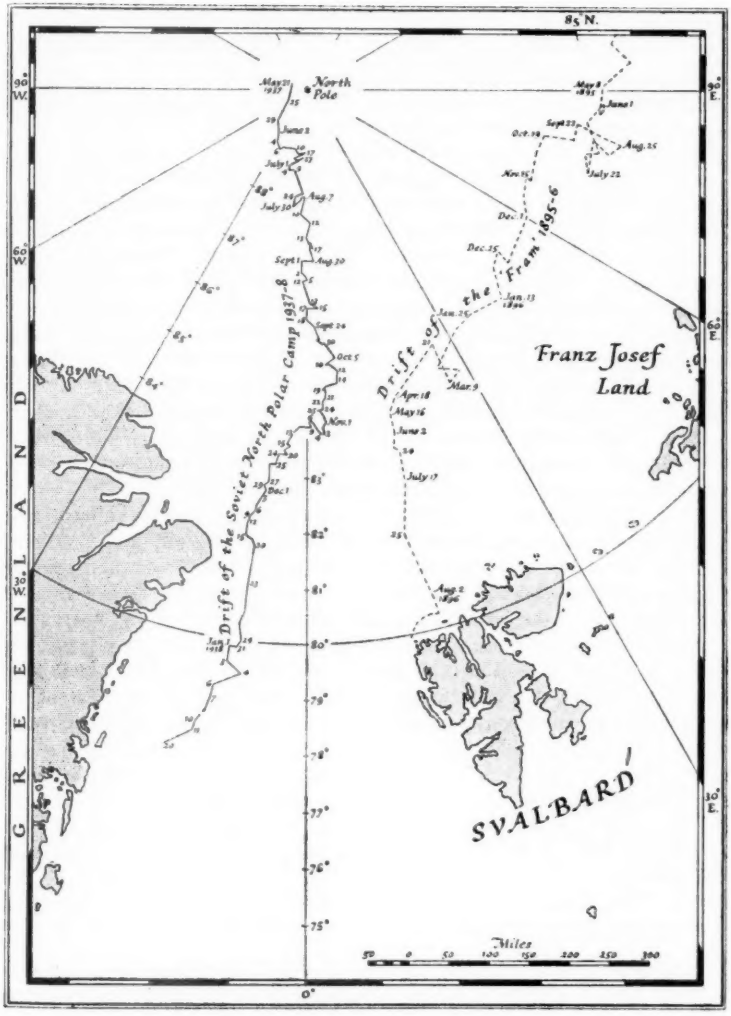
The next depot is at Aguelock, where a small military fort has just been taken over by the C.G.T., and accommodation for travellers will be arranged here, instead of, as heretofore, in huts made of grass mats. The route south now turns eastwards before reaching the well marked as El Ouig on the map, and goes from Aguelock to Kidal and then down to Tabankort well. The purpose of this diversion, which is practically 100 kilometres longer than the old route, is to avoid the difficult markouba country, where great tufts of coarse grass are scattered about the sand. It is proposed to mark out a new track through the bush from Aguelock to Tabankort direct, but avoiding the markouba region. At Gao there are two good hotels with all conveniences.

THE DRIFT OF THE SOVIET POLAR CAMP

THE diagram published in the *Journal* for November last needs correction. We are informed by the Assistant Director of the Meteorological Office, Air Ministry, that in the positions included in their daily weather report and published in *The Times* the sign of the longitude had been misinterpreted, and from about the middle of August the longitudes shown in our diagram should be reversed, East for West. Until the beginning of October the camp was in the neighbourhood of the Greenwich meridian, and the difference not very noticeable on a small scale.

Since October the drift has been accelerated, and at the time of writing in mid January, the camp is about 12° or well over 800 statute miles from the Pole. There had been a report from Moscow some weeks before that two ice-breakers were being sent to pick up the four observers, who are by now in dangerously low latitudes. Their programme has been to send four weather reports every 24 hours, and though there have been some intermissions, and occasional breaks of as much as a couple of days, they have succeeded very well in keeping up their transmissions, and have obtained their position at intervals of 2 or 3 days. If one may judge from the figures kindly communicated to us by the Air Ministry, a new position generally appears in the message at 22^h G.M.T., and we have plotted by preference these 22^h positions against the day of the month. We have kept up also a graph of the latitude which shows sudden accelerations in the latitude drift about August 24 and December 22, with monthly drift in latitude about $\frac{3}{4}°$ from May to August, $1\frac{1}{2}°$ from August to December; and more than a degree a week since December 22.

Meanwhile another polar drift has begun. A Moscow despatch to the Copenhagen paper *Politiken* of January 8 announces that a scientific expedition of three ice-breakers, with 150 men under the leadership of Professor Samoilovich, is drifting in the ice; that on September 23 they were in 75° 15′ North and 132° 20′ West [evidently East]: and that by December 1 they had drifted 980 km. at an average speed of 14 km. per day to a position 78° 20′ N. and 141° 44′ W. [E.]. A wireless message from Professor Samoilovich had stated that the *Fram* at the beginning of January 1894 was at a point 60 miles N.W. of the Soviet ships' position. From the *Fram's* position on this day, as given by Nansen, it appears that the comparison is with the Soviet ships' position on December 1 given above, and not with their position early in January.



Drift of the Soviet North Polar Camp from 21 May 1937 to 20 January 1938

RECENT DECISIONS OF THE P.C.G.N.

AT a meeting held on 24 November 1937 the P.C.G.N. made several important decisions, notably with respect to conventional names, and to foreign systems for the transcription of names into the Roman alphabet, or into its English form.

The desirability of discouraging the use of conventional names has been an open question for years. In November 1930, after the adoption of the new orthography in Turkey, the Committee decided "to relegate to a secondary position in brackets all conventional forms of names in Turkey previously adopted in the P.C.G.N.'s published lists," and to approve "the continuance, as far as possible, of the policy of giving the native name the preference and, if required, of placing the conventional form in brackets after it." There were two important objections to the general abandonment of the use of conventional names: the difficulty of getting people who naturally say "Munich" to say "München," and that of reproducing the diacritical signs used in many foreign languages, on British type-setting and typewriting machines. In June 1932, therefore, the Committee "decided unanimously against taking further action towards deconventionalization."

Since that time, a marked change has taken place in the use of conventional names. Many countries, particularly in Eastern, Central, and Southern Europe, have taken great trouble to regularize the spelling of the names of places within their borders, and to make the correct names known abroad. Familiar names in the *First General List of European Names* (*e.g.* Constantinople) have fallen out of use, in favour of the local official names (*e.g.* İstanbul), since the list was revised in 1928. The public has learnt that Ragusa is now called Dubrovnik, that Spalato is now called Split, and so on. Newspaper reports are now commonly headed by such names as Tallinn, Helsinki, etc., with no reference to the former, conventional names at all. And British typography is gradually bringing into use the hitherto unfamiliar diacritical signs needed for the correct writing of many foreign names.

In January 1937, the Committee decided to prepare a short, general list of geographical names for the whole world, and resolved that in this list "the principal entry will usually be the true (*i.e.* local official) name of the place." That decision has now been extended, to "apply also to all lists of names to be published by the Committee." In future lists, therefore,

> "the name used by the local authority shall constitute the principal entry, under which information is to be gathered, provided that, should the place also be known by a well-established conventional name, that name shall also appear as an entry, with cross-reference to the principal entry."

This means, in effect, that such well-known names as Vienna, Leghorn, Marseilles, shall now appear only as prominent cross-references to Wien, Livorno, Marseille, under which entries all information about the names will be given.

The transcription, into English form, of names from alphabets and scripts

other than Roman, has been satisfactorily regularized by the R.G.S.II system for Europe and the Near East; by the R.G.S.II and the Hunterian systems for the Middle East; and by the Hepburn, and modifications of the Wade system, for the Far East.

Several countries, notably Russia and Japan, not satisfied with good systems of transcription into English, French, German, etc., have endeavoured to develop generalized systems of transcription into the Roman alphabet, for use in dealing with Western countries. There is no question of the official adoption of the Roman alphabet by these countries instead of their own script. The effort is to replace a variety of systems of transcription by an uniform one. So far, the results have not been phonetically satisfactory from the English point of view.

Russia developed a system known as "All-Union Standard 8483," which was given brief notice in the *Journal* (77 (1931) 487). We are officially informed that this system has now been suppressed in Russia, where an improved one is being developed. Japan has long been endeavouring to replace the Hepburn system, which is quite satisfactory for British use, by a more generalized system (*Geogr. J.* 72 (1928) 360–362). In July 1928 the Committee decided "to await the action of the Japanese Government" before recognizing any new system, and in November 1930 "not to adopt for the present the new Romanization of Japanese employed by the Japanese Hydrographic and Land Survey Departments." The Japanese Government issued a decree in September last, for the gradual introduction of the "Nipponsiki" system of Romanization of Japanese script.

The Committee has now considered the general question of the official Romanization of names in countries using non-Roman scripts, and has decided that

> "systems of transliteration into the Roman alphabet, or into its English form, devised by states using other alphabets, shall not prevail over better systems already in British use; but that forms of the Roman alphabet officially adopted by foreign states formerly using other alphabets, be recognized."

With respect to Japanese names, the Committee agreed to

> "adhere, for the present, to the Hepburn system, but that the Romanized forms of Japanese names may be given, in suitable cases, in the Committee's lists, both in brackets, after the Hepburn forms, and in cross-reference."

The policy, like that towards the use of conventional names, is one of gradual conformance to usage as it becomes established.

It was also decided, on November 24 last, "that the Russian letter ж be henceforth transliterated by *zh*." The alteration should be made on p. 38, line 4 (from top), of the *R.G.S. Technical Series : No. 2. Alphabets of Foreign Languages, Second Edition*, 1933, by all who possess copies of the work. The Committee has long desired to make this change, and considered it seriously in November 1930. The main obstacle, the expense of a single systematic correction to large series of official maps and charts, having been overcome, the R.G.S.II system of transliteration of Russian is now brought into accord with modern usage. M. A.

HINTS TO TRAVELLERS: VOLUME II

THE name of the Society's most widely known Special Publication has long been inadequate to describe the two-volume Handbook into which Mr. Coles' pamphlet of 1854 has grown by successive stages. But no one could think of changing it, and it was a positive advantage to the Editor of the eleventh edition of Volume II, because it allowed him to adopt an abbreviated style of expression, rather in the imperative mood, and very necessary for packing in a pocket volume all the material gathered from the many travellers who have helped in its production.

About half the book, the first thirteen chapters, is devoted to the organization and equipment of self-contained travel. Experienced travellers discussed with the Editor the order and the content of these chapters, and later criticized a first skeleton of the text, which those with special and recent knowledge were then asked to amplify with sections or paragraphs upon their specialities. The skeleton became clothed, but with a patchwork of different fashions, afterwards decorated with quotations from papers in the *Journal* to enforce a point or open out a promising line of thought. Even the Editor of the *Journal* was surprised to find how rich and often picturesque was the material ready to his hand. The aim has been to quote a brief passage sufficient to illuminate the subject, and to direct the aspiring traveller back to the original paper.

British exploration since the War has gone very largely to polar regions, the High Himalaya, and the deserts of Arabia and Libya. It was inevitable therefore that the special technique of polar clothing, compressed rations, sledging, and dog driving; the design and material of tents for polar travel and high climbing; and the management of camels or cars in the desert, should occupy space perhaps a little out of proportion to the number of travellers who will work in these extreme conditions. But the methods and devices essential for such conditions find eventual application in those less severe. The *anorak* of Wordie or Grenfell cloth, made after the Greenland pattern, but with fine-woven cotton cloth instead of the more delicate grades of sealskin, makes an excellent garment for ski-ing, for sailing, or for pruning fruit trees on a cold winter day. The pressure cooker, essential for high altitudes, is found to have many advantages of speed and fuel economy in yachting, caravanning, and even in ordinary domestic life. The aluminium-coated fabrics so effective in protecting a polar hut from cold or a tropical tent from sun have their uses in civilization, and still more on its outskirts. One may hope then that Volume II, now greatly extended, and sold separately from Volume I, will interest not only travellers of every degree, but those who find pleasure in making a little variety in life at home.

The last edition had little or nothing corresponding to this first half of the book, on organization and equipment; it was in effect a series of Chapters on subjects of scientific enquiry, and a large medical section. In the second half of the new edition, corresponding roughly to the whole of the old, most of the chapters are entirely new: Geology by Dr. K. S. Sandford; Vegetation by the late Dr. T. F. Chipp; Natural History by Mr. W. L. Sclater and four colleagues; Health, Disease, and Injury by Drs. Carmichael Low, C. B. Warren, and J. W. Cope. The remaining three chapters have been condensed or amplified from the old as space allowed.

The first half of the book then has a character rather different from the second, and more properly bearing the name Hints. It is compiled from many sources; it cannot cover the ground systematically; it is inevitably scrappy. Whenever possible the name of the authority for a paragraph or section or whole

chapter has been indicated, but this does not really do justice to those who helped to lay the broad foundations: to James Scott, who advised on tents and much else; to August Courtauld, who started the graphical treatment of rations; to J. M. Wordie and Kenneth Mason and K. S. Sandford and Mr. and Mrs. Ingrams and G. B. Barbour who read most of the first draft and brought it gradually into shape on weekend visits to Royston. To them, and to all those whose contributions are more adequately acknowledged in the text, the President has in the Preface expressed his cordial thanks.

In planning a journey nowadays it is essential to economize in weight, and we have tried to give the necessary figures, which would not have been possible without the cooperation of manufacturers, willingly given when they were persuaded that the figures would be helpful. Take for example the section on concentrated rations. There are excellent textbooks on the composition of food and the principles of diet, with lots of tables; but when one comes to work out the relative values of different rations there are too often essential figures missing, or they are expressed in terms not immediately comparable. We have therefore been at pains to make a table consistent in itself, and adapted for the form of calculation specified: and this has been possible only with the ready cooperation of the Chief Chemists to the firms who manufacture chocolate, milk foods, biscuits, and such like. Only one firm, and that foreign, declined to state the protein, fat, carbohydrate, and water content of their products, and that difficulty has been overcome: so that the table of food composition is now as complete as need be. Its form is on the face of it illogical, for it gives the constituents in grammes per ounce avoirdupois: but that is practically convenient because the analyses are made in grammes and the foods are bought, packed, and consumed in ounces. From these tables the calorie value of a planned ration is readily calculated.

These compressed rations were developed for polar sledging and for long sojourn at isolated polar stations with no local supplies of seal or penguin to supplement the stores. The vitamin content is then most important. Mountaineers have more recently begun to study these matters, and have still something to learn from polar experience: but not they alone. The aeroplane of the B.G.L.E. was equipped with emergency rations to last two men sledging for a month, and worth studying by any one planning a long-distance flight with the possibility of a forced landing far from supplies, or a long voyage in a small ship that might get short of stores.

In planning the photographic chapter one had to consider first the special requirements of work in the tropics: protection of material from heat and damp; prevention of frilling in development; or preservation of exposed but undeveloped film. Manufacturers now pack their film in carefully dried air and seal it up. We are warned not to seal the film up again after exposure in moist air; but if asked how much water is actually contained in a boxful of warm moist air, it has been difficult to answer. Or again, if a traveller finds drying his developed films difficult, and consults his wet and dry bulb thermometer, he has been not much the wiser, because the habitual figure for relative humidity, that is, the percentage of saturation, is small help to discovering the drying power of the air, *i.e.* the deficiency of saturation not in percentage but in grammes per cubic metre. We have therefore devised and inserted in the chapter on Meteorology a diagram which gives at sight from dry bulb and dry minus wet bulb readings both the moisture content and the deficiency from the maximum, so that the photographer wanting either figure can find it at once.

A table in the Photography chapter which gives the relation of light intensities on a Weston electric exposure meter, aperture ratios, exposure times, and

emulsion speeds to the series $2^{n/6}$ in geometrical progression, should be found useful in many ways. It relates the different scales of exposure engraved on the shutters, the different scales of aperture engraved on the ring of the iris diaphragm, and the different scales of emulsion speeds given upon the packages; and it shows how by using the law of indices one may solve very easily any problems that arise from these matters.

Another numerical question may interest the curious photographer. The cartons of film for small cameras are usually marked in British units at one end and in metric units at the other, and the two are only very roughly equivalent. What is the actual size of the film: and do the figures give the breadth of the film itself or the size of the picture frame in the camera? We found it impossible to obtain this information from the dealers, and were driven to buy a number of different films and measure a number of cameras or the pictures taken with them. The investigation had to be left incomplete, but enough figures are given in the book to show the interest of this curiously unexplored by-way.

Then there was the question of tents, usually described by the name of the man who first designed the pattern or had it designed for him: Whymper, Mummery, Meade. As the first patterns were improved they became the 'modified Whymper', or the 'improved Mummery', and this terminology was both confused and inexact. We had it on the best possible authority that the name Meade had been often misapplied. A schedule of classification of tents, primarily by the number of poles, was made and submitted to the criticism of many authorities, and something has thus been done to disentangle the subject. Both the weight and the efficiency of a tent depend also on its fabric, and enquiries on varieties of weave, the methods of finishing and proofing, elicited from the makers many figures that will be of great value in planning future equipment. We are the more indebted to them because they were willing to disclose for scientific purposes particulars which they might naturally have preferred to retain.

These examples may serve to show the principle that has been followed as far as possible in preparing this volume of 'Hints'. The first necessity in planning is to have figures, whether one is planning rations, or choosing material for tents and windproof clothing, or trying to make one's photography systematic rather than empirical. These were some of the questions which occurred to the enquiring mind of the Editor and occupied his idle moments. They do no more than round off the solid accumulations of experience which have made the bulk of the book: experience gained in recent expeditions, discussed, criticized, and sometimes contradicted by those of equal authority.

REVIEWS

EUROPE

INTERNATIONAL SOIL MAP OF EUROPE (International Society of Soil Science). Edited by HERMANN STREMME. *Berlin: Gea Verlag*, 1937. 21 × 28 *inches; 12 sheets. M.*160

Professor Hermann Stremme is to be heartily congratulated on the conclusion of his great work in producing the first comprehensive soil map of Europe. The dates which it bears—1925 to 1937—are some indication of the immense labour which its preparation has involved. No less than eighty-eight collaborators are listed, but there are no indications of the areas for which they are responsible. Messrs. Brade-Birks, Comber, Crowther, Hart, Morley Davies, Kay, and Ogg are clearly amongst the British contributors. The general scheme of the map is to show soil type by colours and texture by symbols. The major groups are steppe, dry forest, podsolic forest (including brown forest soils), wet, saline, rock, and mountain soils. Amongst the textures distinguished naturally clay, loam, silt, sand, stone, and rock are the chief.

Although this is a soil map of Europe, it is unfortunately clear that it is really a collection of national soil maps imperfectly correlated. Thus the predominant soils of Flanders and western Holland are naturally salt-marsh soils (shown by a distinctive deep blue-green). Yet no such soil group is represented in Britain at all. Perhaps it is unfair to judge this map from the details given for Britain and it may be better to say that those details indicate the sadly backward state of soil survey in this country. The peats of Ireland find no counterpart in Britain except for three minute spots in Lancashire, and British soils are represented as belonging exclusively to five types—brown forest (predominant), bleached (podsolic) forest, mountain, rendzina and alluvial soil. Except that one feels that peats, fen-peats, and salt-marsh soils certainly are represented in Britain, this general classification may be defended. When one comes to detail however defence is more difficult. In the first place is it possible, in a complicated area such as Britain, to map texture on a scale of 1 : 2,500,000? In certain areas it may be, but some of the generalizations produced are very far from the truth, as when the northern two-thirds of the Isle of Wight are shown as clay and the southern one-third as sand. What unfortunately appears to have happened is that rough sketch-maps were supplied for Britain and that these have been generalized by an office cartographer entirely ignorant of the country. The result, especially in south-eastern England, is to give a map which departs so far from the truth as to have little value. Even when one knows the main soil regions it is difficult to interpret the features shown on the map. Thus presumably the stretch of podsolic sands on either side of Southampton Water represents the Hampshire Basin and the broad stretch of brown forest clay soil from north to south through the middle can only represent the narrow Avon valley with its fertile loams somewhat misplaced. Similarly in East Anglia the famous loam region of Young becomes a podsolized sand, as also does the high ground of central Suffolk (the heavy boulder clay area), while the light soils of Breckland cannot be traced. The soils of the lower Trent Vale are podsolized sands, those of Fenland alluvial loams, but the Thames Valley and Romney Marsh are alluvial clays. This travesty of the truth for England mars the value of the whole map for British users and unfortunately overshadows the very different position of the work in Scotland and the magnificent detail for many countries of continental Europe. L. D. S.

THE BRITISH ISLES: a geographic and economic survey. By L. DUDLEY STAMP and STANLEY H. BEAVER; with contributions by Sir JOSIAH STAMP and D. K. SMEE. Second Edition. *London: Longmans, Green and Co.*, 1937 [*first published in* 1933]. $9 \times 5\frac{1}{2}$ *inches;* xii+720 *pages; maps and diagrams.* 25*s*

The first edition of this work was published in 1933 and reviewed in the *Journal* for January 1934. This new edition reflects the changes which have taken place in the past four years, more especially the transition from a period of depression to one of increased economic activity. In the light of these changes parts of the book, for example the chapters on Iron and Steel, have been largely rewritten and the statistical tables generally brought up to date. There are still one or two minor points which appear to need correction or modification. A footnote to p. 148 ascribes to the Great Plague of 1665 an effect on agriculture which is extremely improbable, and on the following page the General Enclosure Act of 1845 appears to be mis-interpreted; the statement on p. 317 that Nef's 'Rise of the British coal industry' "was not, unfortunately, published when the above chapter (*i.e.* Chapter XV 'Coal') was written" rather loses its force in a revised edition published five years after Professor Nef's work first appeared; Josiah Wedgwood appears as Sir Josiah Wedgwood on p. 531; and the Merchant Adventurers are incorporated "as early as 1505" on p. 627 and have "a charter granted to them as early as 1404" on p. 687.

These points are insignificant in comparison with the general value of the book, which, in its revised state, maintains its position as a standard geographic and economic survey of the British Isles. T. S. W.

THE PASTORAL HERITAGE OF BRITAIN: a geographical study. By E. H. CARRIER. *London: Christophers*, 1936. $8\frac{1}{2} \times 5\frac{1}{2}$ *inches;* xii+294 *pages; illustrations and maps.* 10*s* 6*d*

Miss Carrier, who has never lacked courage, has taken for her study a major problem of British geography, namely the age-long use of wide areas of this island for the rearing and grazing of cattle and sheep, the baffling varieties of which, as distinguished on grounds of age and sex, she helpfully indicates on p. xi. It would be more than optimistic to expect in a work of this compass an entirely satisfactory treatment of a theme which recurs throughout the entire historical geography of Britain, for many parts of the story await primary historical research. Miss Carrier has selected a problem of such magnitude as to preclude close and documented research. Her aim has rather been to provide an introductory survey of our pastoral industry, past and present, in relation to a varied physical landscape. She has made sheep and cattle the heroes of her story, and pursues them with unrelenting zeal from age to age and from upland to lowland pastures. Their various breeds, their habitats, their food, their products, and their economic value are all discussed. The horse somehow is ignored.

This book is packed with information, much of which is not usually found in geographical text-books. It is on the whole readable despite an at times amazing misuse of words: this is partly due to the introduction of farmers' language which appears uneasily in print, *e.g.* the phrase "arable sheep." As "an environmental study," which was the author's aim, the book rather misses the mark. Economic history at times dominates the narrative, and we cannot see the country for the sheep. There is an excessive attempt at premature generalization, and Miss Carrier is at her best when dealing with particularities: her accounts of warping (pp. 111–112), of reclamation (chapter XI), and of mountain sheep (chapter II) are concise and convincing. To attempt to describe "agricultural and pastoral workings of a feudal village generalized

to cover the Saxon, Norman, Plantagenet, and later period," is, to say the least, an instance of the author's courage. Nor has a serious effort been made to grapple with an increasing output of economic history which bears on pastoral husbandry. But if at many points of a closely packed narrative we are left wondering and reserve judgment, and if we miss illustrative maps to guide and instruct us in a world of almost ubiquitous pasture, we can agree that the book serves usefully to underline the dynamics of land utilization in the case of a great staple industry. W. G. E.

RIVER FLOW RECORDS OF THE NESS BASIN (Inverness-shire). By W. N. McCLEAN. Series A, River Garry (sheet No. 1, 1*s* 6*d*); series B, River Moriston (sheet No. 1, 1*s* 6*d*); series C, River Ness (13 sheets, 15*s complete in portfolio* 22 × 15 *inches*). *London: River Flow Records*, 1937

The inauguration two years ago by the British Government of an official department under the Ministry of Health and the Scottish Office for the systematic survey of the water resources of Great Britain was a definite, though tardy, recognition of the importance and value of research in a hitherto neglected field of hydrological science. There has existed for many years an effective and excellently conducted branch of the Meteorological Office known as the British Rainfall Organization, to which is assigned the collection, analysis and publication of records of moisture precipitation in the British Isles; but apart from scattered, partial and imperfect private efforts, no attempt had been made to deal on scientific and methodical lines with the important investigation of run-off, that is to say, the quantity of water which, resulting from rainfall, finds its way to the sea through rivers, streams and other surface channels. It was due very largely, if not entirely, to the enterprise of Captain McClean that the deficiency was brought to the public notice, firstly by way of the practical investigations initiated by River Flow Records, the organization which he founded and has since maintained at his own expense; and secondly, through his persistent advocacy of the matter at Meetings of the British Association, resulting in the formation of a Research Committee and the issue of a Report, following which the pressure of public opinion eventually impelled the Government to take action.

Captain McClean and his staff have continued their activities in the field, and the publications under notice are the results of investigations by River Flow Records in connection with three rivers in the Scottish Highlands, extending over a number of years, generally dating from 1929, but in one case instituted at an earlier period and temporarily discontinued.

The titles of the sheets hardly convey an adequate idea of the amount of useful technical data which they contain. The observations of river flow have been made painstakingly and systematically, with the consequence that there is now available a definite record of river flow over a sequence of years, which must be of great service to all who are in any way interested, professionally or otherwise, in the hydrology of the Ness Basin. Indeed the records will undoubtedly serve as an excellent model for similar investigations in other watersheds. They form part of a series giving, in continuous graphical form, particulars of water-levels, flows, storage, rainfall and temperature for the period from September 1929 to December 1935. The present instalment for the Rivers Garry and Moriston consists of a single sheet each, with map and statistical description; in the case of the Ness, there are, in addition, 13 sheets of graphs, size 21 inches by 22 inches, folding to 21 inches by 14 inches, with two sheets to each year.

The publication of these records must in itself be a source of no little expense

to Captain McClean, and in return for his useful public service it is to be hoped that there will be a widespread circulation for an admirable series of charts prepared on scientific lines and issued in a form at once compact and easily accessible. It is obvious that the information they contain could only be secured at the cost of much time and trouble, and the price at which the sheets are issued is remarkably reasonable. B. C.

IN BRECKLAND WILDS. By W. G. CLARKE. Second edition, revised and re-written by R. RAINBIRD CLARKE. *Cambridge: W. Heffer & Sons*, 1937 (*first published in* 1925). 9×6 *inches;* viii+200 *pages; illustrations and map.* 12*s* 6*d*

East Anglia is one of the most interesting parts of Britain, containing many natural regions, each quite distinct but none of them to compare with the Breck. As far as these islands are concerned Breckland is unique.

This piece of country containing the towns of Mildenhall, Swaffham, Brandon, and Thetford grades on the west into the Fen, and on the other sides into the Chalk and Boulder Clay country. It is a chalk plain covered by sands and gravels and cut through by a few small streams. In the remote past it was relatively thickly populated, for nowhere could better flint be found, and flint-knapping still survives at Brandon, which can therefore justly claim to possess the oldest industry in the country.

In mediaeval and later times the land was largely waste. Parts were from time to time cultivated, but it was and is a hard area. To the thin and poor soils was added the menace of blown sand; and to any one now travelling through the region the difficulties of transit even a century ago cannot be obvious. It is now being afforested. Much has been written for and against afforestation, but the author has dealt with the problem fairly. At present the planting will have but small effect on the natural history, but in a few years it is bound to cause alterations. It is greatly to be hoped that large spaces will be left in their natural condition.

The present volume does not pretend to be a regional study in any geographical sense, but the geographer should most certainly read it. He will find in it a wealth of detail bearing directly and indirectly on his own work, and the bibliography will introduce him to more formal matter. Scientific investigation is being undertaken by the Breckland Research Committee, but this volume will remain an essential introduction to the district.

The editor, son of the original author, has done his work very well. The book has been brought up to date—is is perhaps a pity that recent fluctuations of level in the meres are not discussed more fully—and both old and new material blend well together. It should be welcomed by a large circle of readers: it deals with the botany, ornithology, archaeology, history, and economics of the Breckland. Whilst in no sense a text-book, the material is reliable and well set out, and the geographer will get from it a real picture of the place—a picture more valuable in some ways than a formal regional study.

The volume is attractive and the plates are excellent and well chosen.

J. A. S.

BOADICEA: warrior queen of the Britons. By LEWIS SPENCE. *London: Robert Hale*, 1937. 9×5½ *inches;* 284 (*incl.* xvi *pages*)*; illustrations and maps.* 12*s* 6*d*

This work is an account of the life and rebellion of Boadicea (Mr. Spence will have nothing to do with the spelling "Boudicca," now generally adopted by scholars). Unfortunately the material for a life of the British Queen is very

meagre, and it cannot be said that Mr. Spence has made any considerable addition to the known facts. In his own words the author's object is "to ascertain as far as possible the actual circumstances associated with the revolt of Boadicea, . . . to render more clear the details and topography of the campaign which ended in her discomfiture." His main thesis is that the revolt and the subsequent campaign lasted for six months and not a few weeks as previous writers have suggested. As the information available is so scanty, the author is inclined to fill up his narrative with unnecessary padding. He has obviously studied many authorities with care, if not always with discrimination. The mythical Richard of Cirencester is described as "a none-too-trustworthy scribe of the fourteenth century." The book does not contain much that is of interest to a student of geography. E. W. G.

MY OWN QUEER COUNTRY. By JOHN GIBBONS. *London: Methuen*, 1937. 8×5 *inches;* 312 *pages; illustrations by* JOHN LEWIS. 10*s* 6*d*

This is an enjoyable book, whose author is an Odyssean traveller, with eyes well open, sound judgment, and a forthright, sensible, crisp style. Well equipped with a standard of comparison, he describes some aspects of England and his own personal experiences during the last forty or fifty years. He probes our weaknesses and drags into the light our oddities and queernesses. The author gives us many a hearty laugh when dealing with our queer survivals: the watch-house in Ely Place, London, the guinea, the services in empty cathedrals, Hexhamshire, Hallamshire, and Richmondshire, public schools, imprisonment for debt, and the English peerage. "We have a great many jealously guarded liberties on the strict condition that we never try to use them."

Imagining himself to be guiding a party of Americans for their real good, he mostly avoids the ordinary show museum pieces, and steers for places which seem to him in different ways to have the genuine English atmosphere. He rather often claims that he knows just what he is talking about, but on the whole we may fairly concede him this point. He relates without dissent the picturesque tradition about Cross Fell, Cumberland, namely, that it was originally called Fiends' Fell, and that in early days monks exorcised the evil spirits by erecting a crucifix there. The rational explanation is orographical: the Fell, rising to nearly 3000 feet, is a high east–west ridge which crosses at right angles the Pennine range near its western escarpment. This feature can well be seen from the highest point of the Penrith–Alston road. S. E. W.

SCANDINAVIAN ARCHAEOLOGY. By HAAKON SHETELIG and HJALMAR FALK. Translated by E. V. GORDON. *Oxford: Clarendon Press*, 1937. 9×5½ *inches;* xx+458 *pages; illustrations.* 21*s*

This is a book which will be indispensable to students of the northern cultures, ancient and modern; for much that is archaic survives in northern Europe widely. It owes its unusually wide scope to happy collaboration between the professor of archaeology at the Bergen Museum, well known and honoured among British colleagues, and the late Professor of Germanic philology in the University of Oslo. Each has contributed notably to the studies of the other. Falk's study of "words as a record of culture" published in 1900 is still valuable, and the translator has brought his chapters up to date; and his final chapter on "Religion" gives vividly what lies behind the texts, the deeper feelings and world-outlook of the northern folk. Professor Shetelig has devoted much care to the counterparts of Scandinavian culture overseas, in Britain and Ireland, and so is able to speak with authority on the difficult question of influence of one country's art on another, especially complicated where both had so much to

give, and when seafaring was for a while so much easier in the North Atlantic than now. Here too the linguistic evidence is important: when Scandinavian seafarers were leading all Europe through their peculiar skill, English, and even Norman French words were inevitably borrowed, and many have survived.

For geographers, the earlier chapters on geological conditions and the earliest spread of human settlements along the margin of the retreating ice-sheet, and on the evidence for changes of climate, and responsive changes of modes of living, are of especial interest. But the geographical outlook is evident throughout. Both authors have studied their country "as the abode of man" in a very real sense, and make use of all relevant special investigations in other branches of learning—the breeds of dogs and domestic animals, as well as of men, the incidence of diseases and injuries, the identification of ancient woods and other raw materials. There are wholesome cautions on controversial subjects, and frank admission that the writer has a strong opinion of his own. But other views—and Scandinavian antiquity has been a very controversial study—are carefully and fully stated, and there is ample reference to the very abundant literature. Proportion is well observed, and the temptation to stray into interesting but spacious byways has been resisted. It should be noted that no countenance is given to popular gossip about the purity of Scandinavian breeds: the population was demonstrably mixed, as far back as there are any known human remains.

Naturally the material becomes more abundant for the Bronze Age and later periods; and the aspects of greater interest change, especially when the Roman conquest of Britain and much of the Low Countries, and the spread of Mediterranean trade, bring the Baltic coasts more closely in touch with Mediterranean antiquity; and when the Viking Age widens the known world, not only seawards to west and south, but also overland to the Black Sea and the Byzantine culture, with another inheritance through Scythian and Sarmatian intermediaries from Iranian and earlier cycles in the Nearer East. The chapter on "Decorative art" is of peculiar significance from this point of view.

While the earlier part of the book deals with successive periods, and is mainly archaeological, the latter discusses main aspects of Scandinavian culture—subsistence, dwellings, costume, seafaring, weapons, and religious and magical notions—and it is here that the linguistic evidence is most valuable, though it necessarily contributes mainly to our impressions of the later phases of culture.

The book is readable throughout, more like a lecture or museum demonstration than a book of reference; though the very full index shows how valuable a treasury of information it is. But the translation might be better. Norwegian and English are near enough akin to make idiomatic rendering peculiarly difficult, and there are some odd mistakes. On p. 5, "calcium" should be "lime"; for "neck" (pp. 33, 42, 54: German *Nacke*) read "butt"; for "projecting socket" (p. 71) read "collar"; for "solid mountain" (p. 76) read "rock" or "hillside"; for "fosses" and "foss" (pp. 99, 100) read "waterfalls"; "cowskin" (p. 147) should be "ox hide." Other phrases are not clear: "a divided piece of grey slate" (p. 116); "two-shafted weave" (p. 149), "the game of tables" (p. 203); "swung out" (p. 247); "the gable peaks on the ship's tent," though this is explained later (p. 309).

The numerous plates are admirably selected and reproduced: rapid readers should note that some of the most important are printed on both sides of the paper. J. L. M.

GLAZIAL-MORPHOLOGISCHE UNTERSUCHUNGEN AUF LOFOten und Vesteraalen. By MARGRET BYLAND. [*Zürich*]: *J. Weiss*, 1936. 9×6 *inches;* xiv+76+12 (*plates*) *pages*

Some idea of the unusual interest and character of the Lofoten Islands may be gathered from the fact that the Swedish geomorphologist, H. W. Ahlmann, described Moskenesø, the most southerly island of the group, as being "assuredly one of the most interesting tracts on the surface of the earth," significantly adding that "it is also a veritable Eldorado for those who wish to kill themselves by mountaineering." The two groups of islands, though forming a single chain, have significant differences, which recall very forcibly the differences between the Cuillins and Red Hills of Skye. The Vesteraalen, mostly of acid rocks, are lower and less dissected by corries, less rugged, more weathered, and scree-mantled; the Lofotens are chiefly of basic rocks, rising to fine peaks of alpine aspect, with precipitous, fresh rock-faces hardly touched by post-glacial weathering.

Interest is centred in this work upon the corries, of which particulars of eighty-three are given. They are mostly situated with northern or eastern exposure, in leeward situations, and occur with increasing frequency toward the south, until Moskenesø is hardly more than a mountain framework for the corrie-lakes which occupy 28 of its 206 sq. km. Many of the corries are floored at remarkably low levels; eleven are below 100 m., and twenty-eight more below 200 m. In this connection it may be questioned whether it is sufficiently established that certain corrie-like forms in the most northerly island have really been bitten out by differential marine erosion as the writer believes. She attributes them to the severe wave attack to which the whole west coast is exposed, and states that similar "marine amphitheatres" occur commonly elsewhere, and notably on the Riviera and in Scotland. There is an evident confusion of thought here, and perhaps a mistaken view as to the nature and possibilities of marine erosion. To the reviewer it seems probable that these forms are in fact drowned corries. This suggestion is well supported by the forms of other corries which are described. One true mountain corrie whose back-walls run precipitously up to over 700 m. has a lake basin descending below sea-level (—14 m.) even though its lip is 60 m. above the sea. Two others are low-level corries, which received some ice from higher basins; they hold lakes at 140 m. and 77 m., which are respectively 160 m. and 150 m. deep, and a third, whose floor descends to —117 m., has its rock-bar a few feet below sea-level and is a true arm of the sea. These are spectacular depths for basins which are truly of corrie form, albeit the lower members of a corrie series. The writer believes moreover that such depths are probably common, for these are the only three lakes that have been sounded.

These deep round rock-basins, rarely 2 km. long, are believed to be unequivocally of glacial origin, the alternative explanations that have been applied to certain Alpine cases being here inapplicable owing to the uniformity of rock structure and the simplicity of the erosion history. The conclusion seems entirely sound, though the past history can hardly be so simple as is here suggested. A post-mesozoic peneplane is stated to have been overrun and roughened by ice from the Norwegian mainland in the main (or first) glaciation; interglacial normal erosion was then followed by the local glaciation which carved the present forms. There is no mention of the date of the evidently large uplift by which the post-mesozoic peneplane was raised to the level of the present summits, or of the extensive pre- or inter-glacial valley-cutting which must have followed. It seems possible, from the descriptions given, that some of these old valleys may still be traceable in the northern islands. What is more

certain and more significant is that in the Lofotens themselves they were utterly destroyed by the later or local glaciation. Clearly this spectacular region bristles with intriguing problems, and its wealth of morphological interest is by no means exhausted by this valuable and well-documented investigation.

D. L. L.

SCRATCH A RUSSIAN. By H. S. MARCHANT. [*London*]: *Lindsay Drummond*, [1937]. 8 × 5 *inches; 212 pages; illustrations and sketch-map. 7s 6d*

One may learn more about Soviet Russia from this little book of some 50,000 words than from many more ponderous tomes. The writer, a Harrow schoolmaster, has appreciated that the working of a system, communist or any other, depends on the character and temperament of the individuals comprising a community. One can after all learn about communist theories without leaving the study. But it is the practice that matters. Mr. Marchant is well equipped for the task of expounding the character of a people. He has sympathy, a sense of proportion, and a keen sense of humour. He speaks and understands Russian sufficiently. He did not spare himself and took the ups and downs of travelling in the Union in the right spirit. Nor will any one who knows Russia, old or new, find any exaggerations in his story. His conclusions are in the main sound, though some may feel less confident than he (in spite of his experiences of Russian fecklessness and inefficiency) that the Soviets will, under a real or fictitious communism, win through to wealth and prosperity. Many must feel that communism in practice in the Union will tend to exaggerate the defects of Russian character. How far the latter is a result of geographical and economic conditions requires deeper study, but the author has evidently felt a sense of the relationship. Certainly the reader who desires entertainment and a penetrating insight into that character may read this book with profit.

A. S. E.-S.

WATCH CZECHOSLOVAKIA! By RICHARD FREUND. *London: Thomas Nelson & Sons*, 1937. 7½ × 5 *inches;* 112 (*incl.* vi) *pages; map. 2s 6d*

The author has contrived, in concise and impartial manner, to provide a survey of the geographical, racial, and historical factors governing the destiny of a state which might well be regarded as the keystone of the European arch. Like her neighbour Poland, Czechoslovakia's main problem is her minorities: the biggest of them—the Germans who form nearly one-quarter of the total population—occupies territory which, from the point of view of industry, raw materials, and defence, is the most essential to the state; and moreover includes the traditional capital of Bohemia. The historical antecedents for the policy adopted by either side are briefly expounded, and possible solutions indicated.

J. P. H. M.

DEAD PUPPETS DANCE. By PHILIP THORNTON. *London: Collins*, 1937. 8½ × 5½ *inches; 332 pages; illustrations and sketch-map. 10s 6d*

This book purports to recount the author's experiences when he was "wandering about the Balkans in search of songs and dances, and perhaps gossip." It is a work of many graces and few virtues. The map is a pleasing combination of straight and waving, thick and thin lines, diversified on land by clumps of cypresses and groups of dancers and on sea by disporting fish. Montenegro sprawls across Yugoslavia from the Adriatic Sea to the river Morava, Kotor (Cattaro) has deserted the Bocche for the Adriatic coast, Shkodra (Scutari) is playfully spelt Skdodra, Volo has jumped to the west of its gulf, and Smyrna hides behind a misspelling of its Turkish name. In the sketches the drawing is firm and clear, and the photographs of men and women are well taken. The

frontispiece would have gained by having *cimpoi* translated, and a specialist in Balkan music like the author should have made it clear that these primitive bagpipes are specifically Bulgarian rather than Rumanian. Of the photographs facing p. 30, one claims to be the shed, and the other the backyard of "Great-Uncle Djelib's House," which is located in a village with the pen-name of Shejtigjon (? Shënjon; St. John). The shed is a well-known inn on the Tirana–Scutari road, and the backyard is part of the Hotel International at Tirana, where the author stayed; even if he had forgotten the exact position of this photograph, his knowledge of Balkan life should have told him that neither the number nor the type of sheet drying in the yard could possibly belong to an Albanian country house. His writing is light and easy, but defaced by scraps of foreign languages which give a bad impression of his learning and even of his musical ear: such are *tranquil*, reputedly the French for "quiet," and *prossaykhe*, his transliteration of the Greek *prosokhē*. Our confidence in his subject matter is destroyed at the outset by his description of the fire ritual he found in the Albanian mountains. Not one detail in this description rings true; no Albanian peasant would ever do anything so unlucky as to stamp out a fire, and even the freest of the mountain women, the Roman Catholics, never sing, except in church and at weddings, after they are married. Told that the peasants sang of a giant Mathrus who lives on the top of Mount Dajti, he connects the fire ritual with Mithraism. But no such giant has ever lived on Dajti. The formula *aj-aj-aj-atush-ga* which the peasants sang round the fire seems to him a "survival of the actual words used by the Zoroastrians for their fire fields." His Albanian companion professed himself unable to interpret the formula, but when we read it aloud, pronouncing *aj* properly like the English *i*, it is obviously only a sneeze. We must reluctantly conclude that the author has written up a description given him by an Albanian wag of the St. John's fires which are lighted with brushwood on May 1 (Old Style) by small boys in some Albanian villages. Passing over the inanities of travel on which he wastes many of his succeeding pages, we end with the following: till lately the Albanians buried a dishonest man alive (p. 43); there is "a gnarled oak by the marsh-side" near Lesh (p. 63), a shifting marsh; the stone on Mount Pentelikon, apparently not recognized as marble, is "pale pink like a baby's ear when newly quarried" (p. 211). M. M. H.

ASIA

ACROSS CYPRUS. By OLIVE MURRAY CHAPMAN. *London: John Lane*, 1937. 9×5½ *inches;* xviii+256 *pages; illustrations and route-map.* 15*s*

This is a pleasant, readable and well-illustrated description of a visit to Cyprus, in which a skeleton account of the history of Cyprus forms Chapter I. It is entirely free from dogmatic assertion of either a political or archaeological complexion, and presents Cyprus as it appears to an urbane and unbiased traveller who is prepared to admire all there is to be admired in Cyprus and in its people; one who does not all the time expect all the comforts of luxurious travel. The book can be recommended, especially to any person intending to visit Cyprus.

The mere list of contents of the book will excite the interest and curiosity of most educated travellers: among them Famagusta, Salamis, the tomb and monastery of St. Barnabas, Neolithic discovery at Khirokitia, Larnaca and Umm Haram, Holy Week and Larnaca, Limassol and Kolossi with memories of Richard Coeur de Lion, Paphos and Temple of Venus, Kyrenia and Bellapaise.

Mrs. Chapman ends with a chapter on the "Fairy castles" of Hilarion, Buffavento, and Kantara: "the medieval hill-top castles of the Kyrenia Moun-

tains:—memories—which stood out from the rest with special clarity." These are unfortunately never seen by the ordinary tourists, and yet they, more than anything else in Cyprus, present vividly even to the most unimaginative, the vanished world of mediaeval pomp and circumstance, and warring knights—the hill-top refuges of an alien aristocracy not only from invasion, or rebellion, but from the summer heat of the plains. Her readers should derive much pleasure from her writings and pictures; they can implement their interest by visiting Cyprus and their gratitude by helping to save its monuments from destruction. H. R. P.

FRENCH INDO-CHINA. By VIRGINIA THOMPSON. *London: George Allen and Unwin*, 1937. 9½×6 *inches;* 517 *pages; sketch-map.* 21*s*

While paying acknowledgements to the vast and rich literature in French on Indo-China, Miss Thompson remarks that works in other languages are "few and negligible." Few they certainly are, but some of those which have been published are far from negligible. It is surprising that Miss Thompson does not appear to have heard of Sir Hesketh Bell's 'Foreign colonial administration in the Far East' (1928), a valuable work of which half is devoted to Indo-China. Nor does she refer in her text or bibliography to W. B. Harris's 'East for pleasure' (1929), Hermann Norden's 'A wanderer in Indo-China' (1931), or Sidney J. Legendre's 'The land of the white parasol' (1937); yet all these books, by serious observers, contain valuable material on various aspects of Indo-China.

While Miss Thompson is less than fair to other workers in the same field, it is beyond question that she herself has produced the most comprehensive book yet to be published in English on Indo-China. It is a work for the student rather than for popular consumption; its language is that of the thesis; it is academic, exhaustive, and well documented. Miss Thompson's professed aim has been "to lay before the English-speaking public a background for the general problems in French Indo-China to-day," but actually she has done far more than that, since her book is a survey of every aspect of the country's history, culture, resources, and peoples, and describes at length the process of "amalgamation, flux, and interpenetration" of two varied and widely opposed Oriental cultures, and their reactions to an Occidental power which forces them into new channels of thought, action, and feeling. One result is abundantly clear. The Annamites have become machine-minded and have turned away from Chinese culture to Western science. They have absorbed the economics and politics of the French rather than their culture, and in the new desire for nationalism that has invaded Indo-China there are ominous forces which have not yet been conjured. Miss Thompson's reasoned judgment is that save in the economic sphere the balance sheet of Indo-China has registered on both sides more destructive than constructive change.

This book is the fruit of deep study and patient research. It must take its place as a standard work. Since its value as a book of reference is outstanding, it is the more unfortunate that no better index should have been provided: the student who wishes to investigate some point relating to Cambodia finds himself confronted with no less than 46 undifferentiated page references. O. R.

TOWARDS ANGKOR; in the footsteps of the Indian invaders. By H. G. QUARITCH WALES, with a foreword by Sir FRANCIS YOUNGHUSBAND. *London: George G. Harrap*, 1937. 9×5½ *inches;* 249 *pages; illustrations and sketch-maps.* 12*s* 6*d*

In this volume Dr. Wales sums up the results of a number of visits and explorations which he has made during the past six or seven years in Siam, Malaya,

Burma, Java, and Cambodia, with a view to studying Indian colonial expansion during the first millennium of the Christian era. The work is not a scientific treatise but is written in a style likely to appeal to the general public, and it should receive a welcome by all who are interested in the East and particularly in Indian history.

The narrative describes in an interesting manner the author's visits to Takuapā, an ancient seaport on the west coast of the Malay Peninsula, which is mentioned as early as the second century A.D. by Ptolemy as a landing-place for travellers from India and the west, under the name of Takola Mart. From here he took the trans-peninsular route followed by the Indian colonists right across to Jaya on the east coast of the Peninsula. He gives at length his reasons for believing that it was from Jaya, and not from Palembang in Sumatra, that Java received its Indian Buddhist culture; and also that Jaya was the centre from which Cambodia too was colonized by Indian princes and settlers. The former is rather a controversial subject, but Dr. Wales certainly makes out a prima facie case for his theories.

He then gives an account of the visit paid to the ancient city of Sri Deva, which lies on the Pasak river in the heart of Siam between the central plain and the north-eastern plateau. This city had already yielded sculpture of a purely Indian type dating back to the fifth century A.D. at the latest, and Dr. Wales gives a graphic description of the temples and statuary he found there, as well as of the city itself. He then passes on to his explorations at Pong Tük, a small village about 100 miles west of Bangkok, where the most ancient Buddha images, of the Amarāvati type of *circa* the second century A.D., as well as a Roman lamp, had been discovered by Professor G. Coedès in 1927. From Pong Tük the reader is taken to Uthong, the city situated on a branch of the Supan river about 60 miles north of Nakon Pathom, which was abandoned by its Tai prince and his subjects in 1350 as the result of a cholera epidemic. This catastrophe led directly to the founding of Ayudhya, which became the capital of Siam until its destruction by the Burmese in 1767. Dr. Wales found ample proof still existing of the truth of this tragic event, and his description of the conditions under which the city was deserted by its inhabitants is a tribute to his powers of narration. The next chapter of the book is devoted to the Pallava expansion during the sixth and seventh centuries A.D. in the Malay Peninsula and to the effects produced by the dissemination of its culture throughout the Indo-Chinese Peninsula.

Then follows a romantic chapter on the exploits of the Sailendras and of an unknown hero who, under the name of the "King of the Mountain," conquered the Malay Peninsula in the eighth century A.D. and brought with him the Buddhist Mahayana culture of the well-known Pala kingdom of Bihar and Bengal.

The remaining chapters are devoted to short analytical essays on the architecture and sculpture of Java and Bali on the one hand, and of Burma on the other, ending in the final chapter with a well-merited panegyric on the wonders of Angkor.

The scheme of the narrative is well thought out, and the story told speaks well of the energy and enthusiasm not only of the young Field Director but also of his gifted wife who accompanied him on all his journeys.

The following points may be noticed. On p. 129 mention is made of a Siamese "*vihara*, or assembly hall," and then, on pp. 187–8, of a Siamese "*Bote*, or assembly-hall." The first is correct, while the *Bōt* is the consecrated chapel, in hallowed ground and facing east in front of the *vihara*, which is used chiefly for ordination purposes. On p. 171 it is said that *Sailendra* means "the King

of the Mountain." The reviewer understands, on very high authority, that *Sailendra* is the name given in India to the Himalaya mountains, and that the Ganges is known as "the Daughter of Sailendra." In such a case would not Sailendra signify originally "King of Mountains"? And would it not explain why a *Ganga* prince would take the name of *Sailendra*?

On p. 194 mention is made of certain Sung-like bowls which "may quite likely have been imported from Tonkin, where similar glazed bowls have been found." This was a very interesting find for the student of ceramics, but it should be made clear that no kilns have yet been found in Tonkin, and that, though thousands of Sung and Tang-like wares have been unearthed at Tanh Hoa south of Hanoi, their original provenance is still a mystery. The reviewer is inclined to think that they were the products of local Chinese factories, possibly situated in Yunnan. R. LE M.

THE HEART OF A CONTINENT. Commemorating the fiftieth anniversary of his journey from Peking to India by way of the Gobi Desert and Chinese Turkestan, and across the Himalaya by the Mustagh Pass. By Sir FRANCIS YOUNGHUSBAND. *London: John Murray*, 1937, revised with additional material (first published in 1896). $8\frac{1}{2} \times 5\frac{1}{2}$ *inches;* xvi + 246 *pages; illustrations and map.* 9*s*

This is a new edition of six out of the nineteen chapters of Sir Francis Younghusband's classic of Asiatic travel 'The heart of a continent,' first published in 1896. The book was then described in its sub-title as a narrative of travels undertaken in Manchuria, across the Gobi Desert, and through the Himalayas, the Pamirs and Chitral, from 1884 to 1894. The chapters now re-issued in the form of a light and handy volume, in commemoration of the fiftieth anniversary of the expedition, are those in which Captain Younghusband described his remarkable journey from Peiping to India overland across Mongolia and Chinese Turkistan. Such a journey is an ambitious project even at the present day; in 1887 it was a plunge into the unknown, where each mile covered meant a mile filled in on the blank spaces of the map of Asia. But, as Sir Francis shrewdly observes in his subsequently written epilogue, he enjoyed one great advantage over the modern traveller in Chinese Central Asia: the old Chinese Empire was still more or less intact, and the writ of Peiping ran unchallenged through Mongolia and Turkistan. It is also of interest to note that the object of this journey, apart from Captain Younghusband's thirst for exploring, was to ascertain the extent of Russian penetration into Sinkiang. Political history has thus been marking time in Chinese Central Asia.

The journey was made in collaboration with Colonel Mark Bell who, starting from Peiping shortly before Captain Younghusband, travelled to Sinkiang by the main cart road through Shensi and Kansu provinces. Colonel Bell arrived first in Kashgar, and continued over the Karakoram to India, being the first European traveller to reach India from China overland.

Sir Francis crossed the Gobi Desert by the old caravan trail through Outer Mongolia, which used to carry much of the trade between China and Turkistan. This route runs west and north-west from Kwei-hwa-ch'eng (*alias* Suiyuan), crosses the Galpin Gobi to the Hurku hills, continues along the southern base of the Altai mountains, thus avoiding the worst sands and desolation of the western Gobi, and finally swings southwards into Sinkiang to reach Hami, Barkul, or Kuch'eng. Little more is known to-day in England about this route than when Sir Francis explored it fifty years ago. International jealousies and political complications furnish the explanation. Outer Mongolia is now a republic affiliated to the U.S.S.R., its borders strictly closed to all Chinese and

foreign travellers excepting Russians. The Chinese caravans, being no longer able to take this Outer Mongolian route, opened up the more southerly trail, Mr. Lattimore's Winding Road, which runs through Inner Mongolia and across the Black Gobi, skirting the Outer Mongolian border on the south. The route now being developed for motor traffic is an adaptation of the Winding Road. The Mongols who guide travellers along it state that the old trade route through Outer Mongolia affords much better going for motor traffic. This is confirmed by the reports of Mr. Roy Chapman Andrews, whose motor transport expeditions in 1923 and 1925 explored some of the country up to the eastern end of the Altai mountains traversed by Younghusband in 1887. No other British or American travellers have published any description of this important road; and Sir Francis' story of his traverse of the Gobi retains therefore a topical as well as an historical interest.

Comparing routes and distances: Captain Younghusband, travelling by the Outer Mongolian route, made the distance from Kwei-hwa-ch'eng to Hami to be 1255 miles, which he covered in seventy days—good going for a camel caravan. The distance by Ford speedometer for the same journey through Inner Mongolia, round the Etsin Gol lakes and across the Black Gobi *via* Mingshui to Hami, is 1195 miles, which can be covered by a motor truck in twenty days or less.

From Hami Captain Younghusband continued by the main cart road *via* Turfan, Toksun, Karashar, Korla, and Kuchar to Aksu. This road is nowadays well known to travellers in Chinese Turkistan; but they will read with interest the description of places and conditions along it as they appeared to the pioneer explorer of 1887, when Sinkiang had only recently been reconquered after the great Muhammadan rebellion led by Yakub Beg. At Aksu Captain Younghusband left the cart road and travelled *via* Uch Turfan and through the Kirghiz hill country to Kashgar.

The hints and observations about travel in Mongolia, like the descriptions of the cart road through Chinese Turkistan, are extraordinarily up to date; and the traveller who braves the perils and discomforts of the Gobi will find much useful information in this description of a journey made fifty years ago.

Two chapters are devoted to the passage of the mountain barrier which separate the plains of India from those of Turkistan. In those days Hunza was a nest of robbers and the direct and relatively easy route across the Chinese Pamirs and down the Hunza river to Gilgit did not exist for European travellers. The only known road was the old trade route across the Karakoram pass to Leh. Captain Younghusband chose an unknown route leading up the headwaters of the Yarkand river, across the Muztagh pass and down the Baltoro glacier into Baltistan; an accomplishment of single-handed exploration surpassing even his traverse of the unknown Gobi.

In his preface to the new edition Sir Francis says that little attention was paid by the public to his journey at the time, a short paragraph in *The Times* being all the notice taken of it by the daily press. But as the years rolled by the journey stood out more clearly as one of the finest feats of exploration in the history of Asiatic travel. The original edition of 1896 being out of print and not always easy to obtain, many will regret that more of it was not embodied in the new one.

The map is a reprint of one of those in the edition of 1896. It adequately illustrates the journey and shows by comparison with modern British maps how little progress has been made in the past fifty years in the proper mapping of the Gobi and Mongolia. Very few of the place-names marked on Captain Younghusband's traverse of the Gobi can be identified on the relevant sheet

of the British 1/4 M map, on which it is difficult to align either the old Chinese trade route through Outer Mongolia, or the Winding Road, or the new motor trail.

Two small errors are noted. On p. 238 *Kuai-Nuachang* must be a misprint for *Kwei-hwa-ch'eng*. And there seems to be an error of date on p. 88, where Sir Francis describes himself as approaching Hami on July 22; as he left on July 8, presumably the former date should be July 2. E. T.

FORBIDDEN JOURNEY; from Peking to Kashmir. By ELLA K. MAILLART. (Translated by THOMAS MCGREEVY.) *London: William Heinemann*, 1937. $8\frac{1}{2} \times 5\frac{1}{2}$ *inches;* xvi+312 *pages; illustrations and map.* 12*s* 6*d*

Long before the days of Marco Polo, the mere thought of Central Asia, with its great caravan routes to and from Cathay, was enough to stir the imagination of any European; and to-day, even though China has lost her mystery and Mongolia and Turkistan have been largely explored, the old fascination still persists. In fact in some ways it has actually increased, for it is only comparatively recently that the political importance of Central Asia has been realized; and, apart from all else, in these days when international privacy is almost unknown, the existence of a great area from which it is seldom possible to get any reliable news would alone be a cause of the keenest interest.

Mlle. Maillart left Peiping at the beginning of February 1935, and, with Peter Fleming, made a journey of eight months across Inner Mongolia and through Sinkiang to Srinagar. In 'News from Tartary' Peter Fleming has already given his story of this journey; but, while he concentrated perhaps rather more on the political state of the country, Mlle. Maillart has mainly confined herself to a most entertaining account of daily events and general conditions of life, which makes excellent reading. Her descriptions, especially of people, are good; and, in this connection, it is interesting to note that the typical Mongols she describes seem, both in dress and appearance, to be exactly like the Khampas of eastern Tibet. They have moreover the same strange habit of looking at pictures with one eye through a half-closed fist, apparently using this as a sort of shade.

The task of a translator is invariably difficult and usually thankless, but Mr. McGreevy is genuinely to be congratulated. Destructive criticism is easy, but even so the faults which strike one are very few. It is, for instance, rather irritating to find *sympathique* given several times as "sympathetic," and it is hard to believe that the guard at the British Consulate General in Kashgar really carried ibex heads as "ornaments" on their caps. These however are minor points, and on the whole one seldom realizes that the book was not originally written in English.

In a delightful book, Mlle. Maillart makes only one serious error, when she states that the whole of Inner Tibet is a dependency of China. In point of fact, the Hsikang province, as far east as the Mekong River, is Tibetan. R. K.

CRISIS IN CHINA: the story of the Sian mutiny. By JAMES M. BERTRAM. *London: Macmillan and Co.*, 1937. $9 \times 5\frac{1}{2}$ *inches;* xxii+318 *pages; illustrations and route-map.* 10*s* 6*d*

The author is a Rhodes Scholar from New Zealand who travelled to the Far East to study social and political developments. This is his first book and is attractive reading.

On 12 December 1936, China was bewildered to learn that Chiang Kai-shek, the virtual dictator of China, had been kidnapped at Sianfu, the capital of the north-western province of Shensi, by one of his generals, Chang Hsüeh-liang,

"the young marshal." Mr. Bertram was at Peiping at the time and he determined to try and unravel the puzzle by proceeding to Sianfu. Two days before his arrival the two principal actors on the stage had left together for Nanking by aeroplane. The phrase coined locally "advice by military force" defined with some piquancy the course of events during the dictator's detention. The story of this fortnight, as the author learnt it from those who helped to make the revolt, is told in Chapters VIII to XII. It is a thrilling narrative and Mr. Bertram appears to have successfully recaptured the atmosphere of suspense during these days of crisis.

To the Manchurian soldiers, now exiled in the inhospitable region of Shensi, had been assigned a large share of the unenviable task of "pacifying" the Chinese Red armies in Shensi numbering about 100,000. The former had no heart for their job and, after a reverse or two in the field, they yielded to the propaganda of their opponents calling upon them to abandon civil war and join hands in fighting Japan, the enemy and invader of China. Neither the dictator nor any member of his government at Nanking appeared to have realized, until too late, this form of menace towards an army which believed it had been betrayed by the Nanking Government in the ignominious campaign of 1933.

Mr. Bertram is perhaps inclined occasionally to idealize his communist friends and acquaintances. Nevertheless, the Red armies had a marvellous record behind them and their chiefs were young men who cared more for ideals than dollars. Their fanaticism burned with a fierce flame for ten years, and they fought their way for thousands of miles from an untenable base in Kiangsi on the east across formidable physical obstacles and through many hostile provinces into Shensi on the north-west. Perhaps the flame would have dwindled and died out in these poor lands had it not been fed by the mass bitterness of the Manchurian soldier, who realized that he had lost nearly all of the things he cared about—his home and his "face"—and believed that this was due to his betrayal by the same dictator who was now urging him to annihilate the Reds.

The political unification of China may be dated from the days of Genghis Khan, seven centuries ago, but the unity of the economic life did not begin until the introduction quite recently of the foreign system of branch banking, which has developed at an amazing rate within the last few years Moreover, the cessation of civil war and the cooperation under one central leadership of the striving parties or, in other words, the consolidation of the military strength of China appeared to be in sight after the events recorded in 'Crisis in China.' The Japanese saw that the day was not far distant when they would have to face the political, economic, and military hostilities of a united China, though it is quite likely that an important minority have never desired war and have been anxious to discover a way out of the labyrinth of Sino-Japanese difficulties by other methods. E. C. W.

AFRICA

RELIGION AND MEDICINE OF THE GÃ PEOPLE. By M. J. Field. *London: Oxford University Press*, 1937. 9×5½ *inches;* viii+214 *pages; illustrations and map.* 17*s* 6*d*

This book comprises an account of the ritual of the Gã people of the Gold Coast. It describes their gods and priests; notions of soul, personality, life; mediums, medicine-men, witches, ideas of witchcraft; and ceremonies connected with pregnancy, childbirth, puberty, and death.

It is too detailed and specialized an account to interest any but anthropologists. Moreover it is essentially a source-book for the ethnographer who has made West Africa his particular field of study, rather than for the sociologist. As an

ethnographical study it is a valuable supplement to the works of Bosman, Ellis, and Rathay. Unfortunately, Miss Field has decided to be independent, and has not sought inspiration from her colleagues in the same field, thereby displaying ignorance of scientific method. Thus in the preface she tells us: "There are, I believe, earlier accounts of the manners and customs of the Gã, notably one by Ellis. I have deliberately refrained from reading any of these as I wished to approach the people themselves unhampered by pre-conceived ideas about them." E. E. E.-P.

ASPECTS DE VÉGÉTATION DES PARCS NATIONAUX DU CONGO Belge. Série I. Parc National Albert. Vol. I. Fasc. 1–2. Aperçu général de la végétation (d'après la documentation photographique de la Mission G. F. de Witte—1933–1935). By W. ROBYNS. 13×10 *inches;* 42+12 *pages; illustrations*

EXPLORATION DU PARC NATIONAL ALBERT. Mission G. F. de Witte (1933–1935). Fasc. 1. Introduction. By G. F. DE WITTE. 11×7½ *inches;* 39+xxxii *pages; illustrations and map*

LES PARCS NATIONAUX ET LA PROTECTION DE LA NATURE. S.M. LE ROI ALBERT, S.A.R. LE DUC DE BRABANT, and VICTOR VAN STRAELEN. *Bruxelles: Institut des Parcs Nationaux du Congo Belge,* 1937. 11×7½ *inches;* 88 *pages; frontispiece*

The Parc National Albert, situated between the Lakes Kivu and Edward and in the trough of the great rift-valley, contains some of the most magnificent scenery of tropical Africa. It is accessible by road from Kenya and Uganda, and in addition to the interest of its scenery—luxuriant vegetation, snow-clad mountains, and two active volcanoes—it possesses features of great scientific importance. The climate of this great sanctuary of wild life varies from the arid plains of Lake Edward—the home of great herds of game—to the alpine regions of the mountain peaks, which thus renders possible a great diversity both of animal and plant life. It is therefore with great pleasure that naturalists welcome the publication of the results of the expedition of Dr. G. F. de Witte.

The 'Aspects de végétation des Parcs Nationaux du Congo Belge' will appear at regular intervals in parts containing six plates accompanied by explanatory notes. Vol. I, fascicles 1–2, now issued, consists of exquisite plates of the vegetation by G. F. de Witte and others, together with a general account of the phytogeographical conditions of the area and of its vegetation by Professor W. Robyns, an expert botanist and Director of the Botanic Gardens at Brussels, who has himself visited the Belgian Congo.

Fascicle I of another series, entitled the 'Exploration du Parc National Albert,' has likewise been published. This consists of 32 further plates illustrating the scenery of the country, its vegetation and flora, with a general account of the Parc National Albert by M. de Witte himself. The author deals with the area under three main geographical divisions: the laval plains of Lake Edward and the Rutshuru river; the mountain ranges and the volcanic massif; and the laval plains and the volcanic region, each of which is again subdivided. Though he provides a very clear general sketch of the vegetation, and many notes on the plants, the author concerns himself largely with the zoological aspect of the Reserve, particularly with the birds, fishes and smaller mammals.

The third work cited above contains discourses by the late King Albert at the opening meeting of the Administrative Commission of the Parc National Albert in October 1929, and by the present King of the Belgians, and thirdly a speech on the necessity and advantages of the protection of nature by M. Victor Van Straelen. These are published in both French and Flemish.

A. D. C.

ANIMAL TREASURE. By IVAN T. SANDERSON. *London: Macmillan and Co.*, 1937. $9\frac{1}{2} \times 6$ *inches;* 326 *pages; illustrations.* 12*s* 6*d*

Some of our readers may remember a lecture given before the Society a few years ago by the author of this work about his adventures in the British Cameroons (now included in Nigeria).[1] The expedition was organized for the purpose of making a survey of the wild life of a district in the forest area of West Africa and was supported by the Percy Sladen Trust and the British Museum. The area selected was in the south-western corner of the Nigerian Protectorate on the upper waters of the Cross River. Part of the time was spent at Mamfe on the low ground, and part in the Asumbo country farther north in the hills bordering on the Banende district of French Cameroons. The present volume is devoted almost entirely to Mr. Sanderson's methods of catching the animals inhabiting the forest and of watching their habits and reactions. Lemurs and porcupines, leopards and chimpanzees, snakes and frogs all come in for a share of his attention, and there is a very interesting account of the gorillas of the Asumbo Mountain Forest; though neither Mr. Sanderson nor his two companions shot one they were several times within sight and hearing of them, and they obtained a live young one from a native hunter, which however did not survive to be brought back to England.

The volume is well illustrated with pictures in sepia brown reproduced from the author's own sketches, perhaps a little stiff but in very characteristic attitudes and with expressions showing their mental attributes. Though of no special geographical interest the volume gives a lively account of the adventures of Mr. Sanderson and his two companions, Mr. W. M. Russell and Mr. H. P. Seaton. He seems to have got on very well with the native inhabitants and especially with the Munchisi, whom he found most useful assistants in the trapping of the animals which he required. There is no map and no index, both of which would certainly have enhanced the value of the volume, but we can strongly recommend it to any one interested in the wild life of tropical Africa. W. L. S.

SNOW ON THE EQUATOR. By H. W. TILMAN. *London: G. Bell & Sons*, 1937. $9 \times 5\frac{1}{2}$ *inches;* xii+266 *pages; illustrations and maps.* 12*s* 6*d*

Mr. Tilman has in addition to his gifts as a mountain climber the pen of a ready writer. In this book he gives a most light-hearted and entertaining account of his life during fourteen years in East Africa. He went there after the war, and became a flax and coffee planter, and later a gold prospector. In his spare time he climbed mountains and hunted game, and finally bicycled across Africa. His efforts to earn a living are described with a keen eye to the humorous side of every situation. But beneath the banter it is not difficult to detect the serious thinker and the acute and accurate observer. Many a more pretentious book contains less practical information than this pleasantly written volume.

Coffee planting kept him hard at work, but he was able to devote occasional holidays to shooting, and he describes with humour and useful practical comments his adventures in search of game. His descriptions are good; the difficulties of stalking when accompanied by natives who have not the smallest idea of concealment or silence; the nervous apprehensions of the inexperienced hunter; his amazement when his first shot at an elephant drops it dead; the vagaries of rhino and buffalo—all are portrayed in a way that makes excellent reading.

Hunting experiences were varied by assaults on mountains, and the summits

[1] *Geogr. J.* 85 (1935) 113–41.

and peaks of Kilimanjaro, Ruwenzori, and Kenya were climbed. These expeditions are described with details which can be fully appreciated only by the expert mountaineer. The greatest adventure of these climbs took place on Kenya, when, after much arduous work, he and his companion and leader S. were beset by difficulties. On the descent Tilman lost his axe, and S. was attacked by violent spasms of sickness, due to having eaten some impure tinned food. In the chapters on Ruwenzori there is a good summary of the legends of the Mountains of the Moon, and of modern discoveries of the Central African mountains, leading to the usual conclusion that Ruwenzori is the most probable origin of the legends. Incidentally the author rightly points out the incorrectness of calling the Mufumbiro Volcanoes the "Virunga Mountains", "virunga" being simply a native word for mountains.

The journey home formed a fitting conclusion to the author's whimsical way of treating life. His own inclination, time, economy and novelty combined to lead him to the decision to travel on the humble push-bike across the continent. He started from Kampala, and travelled by the Mufumbiro Volcanoes to Lake Kivu. In this region only did he accept conveyance in a lorry, for the reason that the hard jagged lava rock of which all this country is composed makes bicycle travelling practically impossible; a fact which any one who has been in those parts will readily endorse. From Kivu he went north to near Irumu, then west to Stanleyville, on the Congo; north again by a wide detour to Bangassu and Bangui, on the Ubangi River, a tributary of the Congo; and finally west to Kriki on the coast, and Duala, where he embarked. The journey of 3000 miles was accomplished in fifty-six days, not without incident and minor adventures, but without serious difficulties. In fact Mr. Tilman's main impression, on reaching his goal, was one of some disappointment, at the ease with which the journey had been made. But, while it is perhaps true that the high road in Africa, with motor transport a commonplace, is becoming almost dull it would be a mistake, and unfair to Mr. Tilman, to assume that any one could do with the same ease what he did. He has the gift of the real traveller, and can get through where others would find obstacles or fail. With the undoubted increase in safety and comfort something has however been lost. Those who have never taken the narrow African path on their own feet, at the head of the long line of porters, have missed something which cannot be replaced.

Not the least attractive feature of this charming book is the apt quotations, at the head of each chapter, and in the text. The illustrations are from excellent photographs, mostly of mountain scenery; with tail-pieces by Bip Pares, done in the style of wood-cuts, but presumably, from the description, pen-drawings. There are good diagrammatic maps of Central Africa and of the route taken across the continent on the bicycle journey, and of the summits of Kenya and Ruwenzori. E. M. J.

MAPUNGUBWE: ancient Bantu civilization on the Limpopo. Reports on excavations at Mapungubwe (Northern Transvaal) from February 1933 to June 1935. Edited on behalf of the Archaeological Committee of the University of Pretoria by LEO FOUCHÉ. *Cambridge: University Press*, 1937. $12\frac{1}{2} \times 9\frac{1}{2}$ *inches;* xiv + 184 *pages; illustrations and plans.* 50*s*

Some six years have elapsed since Miss Caton-Thompson gave the archaeological world the results of her intensive study of what was termed the Zimbabwe culture and thereby set a standard for the examination of similar problems.

Such a problem arose in 1932 with the discovery of a ruined native fortress on Mapungubwe Hill, in the extreme north of the Transvaal, on the south bank of the Limpopo river. This hill has for long time been regarded as taboo by

the local natives and there were also stories of buried treasure; it was this latter tradition which led to its discovery by Europeans. A Dutch family living some 50 miles away located its position and succeeded, eventually, in scaling the 100-foot cliff which surrounds it. Among the debris on the summit, they found in addition to pottery a considerable quantity of thin gold plating, tacks, etc Luckily one of the sons brought this discovery to the notice of a professor at Johannesburg University. Further inquiry then came into the capable hands of Professor Fouché, who in 1933 arranged a preliminary scientific expedition, and in the time available much was achieved. It was realized however that the interest of the site justified fuller examination, and in 1934 he organized an expedition which was placed under the direction of the Rev. Neville Jones, with whom were associated Messrs. C. Van Reit Lowe and Schofield.

The results of these two expeditions are chronicled in detail in this monograph and illustrated lavishly by illustrations and plans. The conclusions arrived at accord closely with those of Miss Caton-Thompson at Zimbabwe and again demonstrate that fanciful theory cannot stand up against the careful deductions of modern archaeological method.

As at Zimbabwe there can, it is believed, be no doubt whatever that the inhabitants were Africans; and the general conclusion from the culture material is that the first settlers on the site were of Sotho-Shona stock at about, very roughly, A.D. 1500 as compared with the first occupation of Zimbabwe by people of Sotho stock about A.D. 1300. It is thought too that around A.D. 1750 there occurred the advent of the Venda people and that about this time Mapungubwe was abandoned. About 1830 the Matabele invasions gathered force and the inauguration of this era marked the decay of the older Bantu civilizations in this sector of Southern Africa.

In Europe and the Near East the evolution of design in pottery has proved of the greatest archaeological assistance in the comparative dating of a series of detached finds; the systemization of the study of ancient potsherds has during recent years made great advances. In Africa, from the Equatorial region southwards, we have a new field for such a study and for that reason the section on the pottery from Mapungubwe and Zimbabwe by Mr. J. F. Schofield should be welcomed, for no such analysis has hitherto been attempted. If it be followed up by work on similar lines and gradually extended northwards it is believed that much light will be thrown eventually on the racial migrations of Africa after the Stone Age period and even before its conclusion, for rude pottery is found to be contemporaneous with the Wilton stage of the Stone Age and some claim that it is to be found in the lower deposits of Bambata in Southern Rhodesia. The beads found have been examined by Mr. H. C. Beck and his diagnosis of their origin and dates does not conflict with the deductions made from other material.

We now come to the skeletal material which has been studied in great detail by Dr. A. Galloway. Probably owing to the paucity of lime in the soil this consists of a collection of bones, more or less fragmentary. In spite of the disadvantages Dr. Galloway is emphatic in stating that all the physical features of the Mapungubwe remains are African. At the same time he disagrees with the postulate that the culture of Mapungubwe was entirely that of a Bantu-speaking stock, for in the skulls examined only one was 40 per cent. negro and the others ranged from 10–20 per cent. negro. He claims therefore that the overwhelming percentage of characteristics was derived from either Bushman or Boskop stock. His final conclusion is that as far as the limited amount of material can be considered typical, it represents a homogeneous Boskop—Bush people, physically akin to the post-Boskop material from the coastal caves and

that the negro influence is negligible. If this is accepted, we thus have here the dilemma of one race possessing the culture of another; can it be that an alien race from the north was ruled over in this outpost by a dominant minority which had long been established in this region? There is evidently need for a larger amount of material before this enigma can be solved.

With a clear appreciation of the problem, Professor Fouché sums up the conclusions based on all aspects of the results, with a plea for further and more extended investigation without the hampering fact of territorial boundaries, and it is to be hoped that his appeal will not be ignored.

The whole of this work forms a remarkable monument to the archaeological skill and deductive capacity of all those who have contributed to make it such a comprehensive survey. C. W. H.

BIG GAME HUNTING AND ADVENTURE, 1897–1936. By MARCUS DALY. *London: Macmillan and Co.*, 1937. 8×5 *inches;* xii+322 *pages; illustrations.* 10*s* 6*d*

Probably all books of this kind have their tall stories, but some of Mr. Daly's interesting experiences must be very hard to beat; notably the occasion on which he killed three bull elephants within a few minutes, the third of which had picked him up and was in the act of throwing him on to a tree when it received its death wound. Mr. Daly is a sympathetic as well as a successful hunter. His book is written in a natural style, upon which the publishers decline to improve, judging that it is suitable to the subject. The scene is laid in Central Africa and to the south, and the volume comprises twenty chapters of varying length, some of which deal with the author's own experience while others give accounts of various animals hunted and their peculiar habits, while in addition there are hints on equipment with some instruction in shooting. The future prospects of big game shooting in Africa are discussed, and in chapter XIX a new and ingenious theory to account for the existence of ancient ruins in Rhodesia is put forward. The book contains twelve illustrations which include good pictures of animals shot by the author. W. G. G.

NORTH AMERICA

I PRIMI ESPLORATORI DELL' AMERICA. (Gli Italiani; primi esploratori dell' America.) By ROBERTO ALMAGIÀ. (L'opera del Genio Italiano all' Estero. Serie settima. Volume unico.) (*Roma*): *La Libreria dello Stato* (for *Ministero degli Affari Esteri*), 1937. 11½×9 *inches;* xvi+516 *pages; illustrations and maps.* *L.*250

This handsome volume is skilfully planned to exhibit to the general reader the share of Italians in the discovery of America. Produced by the Italian Ministry of Foreign Affairs, it is well printed and lavishly illustrated: fifty figures in the text, fifty plates, of which twelve are reproductions of maps in whole or part, and, in a folder, twelve larger sheets of reproductions. The pages are not burdened with notes, for these have been relegated to the end of the volume. On referring to them the reader will obtain some idea of the controversial literature which has sprung up around almost every person and event recorded in this volume. Professor Almagià, within the limits imposed by the plan, has accomplished a difficult task with ability, and shows a wide acquaintance with the relevant literature.

In brief his theme is that the greater part of the eastern coastline of the Americas from Northern Labrador to the neighbourhood of the Straits of

Magellan was first effectively explored by Italians, admittedly, of course, in the service of Spain, Portugal, and England. This claim is based upon the voyages of Columbus, Vespucci, Verazzano, and the Cabots. The drawback to surveys of this nature is the omission of the work of other nations; in this instance it is the Portuguese navigators who suffer most, and to some extent, the later Spanish explorers in the Gulf. On the grounds that, even if established, pre-Columbian discoveries had no effective results, this question is not discussed, and something more might be said, for example, of Cabral and the Cortereals.

It is also part of the author's plan to show that Columbus' voyages were the outcome of a carefully worked-out plan, the fruit of wide and accurate scientific knowledge and training; yet a great many of the facts established or accepted in this book make it difficult to hold this view. Columbus is regarded as a man with "una larga practica delle cose di mare," and "una sufficiente cultura teorica" to evolve himself the project of reaching Eastern Asia by the west. This appears to be the least successful part of the book. Considerable doubts must be entertained as to Columbus' practical seamanship. Whatever its extent, it was admittedly picked up from the Portuguese—and it must be remembered that until some years after his arrival in Portugal he was a practically uneducated man engaged in commercial affairs—yet it is curious that he rejected some of the fundamentals of their science. Professor Almagià repeats the often refuted claim that Columbus discovered the deviation of the compass needle, and further adds to this the singular statement that he discovered the movement of the Pole Star around the Pole, a fact known to navigators at least a century earlier. It is difficult also to accept Columbus in the rôle of a detached scientific observer when the wild cosmographical theories he later advanced are recalled. It is interesting to note that the author completely neglects the religious and mystical side of Columbus' character, an understanding of which is essential to comprehend his strange genius.

As for the theoretical basis of the plan, the author indicates the accepted sources of Columbus' data, but argues that he did not become acquainted with the Toscanelli correspondence until 1488, by which time he had evolved a similar theory for himself. The fact is also established that the "Indies" were mentioned as the goal of the first voyage prior to the departure; though there was some vagueness as to their precise location, this appears to dispose of Vignaud's assertion that it was only on his return that Columbus claimed to have been thither. The necessity, from the author's point of view, of maintaining these arguments will be apparent. Others will consider that the idea of exploration to the westward was "in the air" at this period, and that it is Columbus' claim to fame that he had the force of character, derived from an almost mystical conviction of destiny, to carry through the first successful voyage despite innumerable obstacles. G. R. C.

UNSER AMERIKA; der deutsche Anteil an den Vereinigten Staaten. By COLIN ROSS. *Leipzig: F. A. Brockhaus*, 1936. $7\frac{1}{2} \times 5$ *inches;* 317 *pages; sketch-maps. M.*4

AMERIKAS SCHICKSALSSTUNDE; die Vereinigten Staaten zwischen Demokratie und Diktatur. 7. Auflage. By COLIN ROSS. *Leipzig: F. A. Brockhaus*, 1936. $7\frac{1}{2} \times 5$ *inches;* 312 *pages; illustrations and sketch-map. M.*6

In these two books Dr. Colin Ross interprets the United States to modern Germany, of which he is a citizen. By nature he is not unsympathetic to the country here portrayed, for he boasts some Anglo-Saxon blood, and, were he not a German, confesses that he would wish to be an American. The books,

which were written largely for internal consumption, contain a spiritous and well-spiced blend of geography and politics. They are likely to interest the English reader only in so far as he may wish to understand the German viewpoint on American history and its contemporary life.

'Unser Amerika' indicates not an ambitious seeking for colonial accessions across the Atlantic, but rather the part played by Germans in the settlement and history of the United States. This is a legitimate inquiry, and it receives at least full justice: it is well that Englishmen should take account of the German, as distinct from the British, contribution to the polyglot civilization of the United States. According to Colin Ross's figures, some twenty-five millions—or about a quarter of the white population of the United States—are German in one way or another, and he provides a map of the so-called "German girdle" (p. 27). At the end of this book is given a table of events between 1492 and 1936 in which are included those relevant to *Amerikanischen Deutschtum:* "Germanism" is liberally interpreted to include the map-making of Mercator and other achievements of the Low Countries.

'Amerikas Schicksalsstunde' surveys the contemporary life of the United States on a broad basis of distinctive regions. The author ranges from discussions of the agrarian problem, large-scale industry, the frontier with Latin America, and the New Deal to descriptive accounts of the Southern States, the Californian coast and the Prairie. The titles and sub-titles of chapters strike a boisterous note and the author certainly bestirs himself to entertain his readers. The book is illustrated with some excellent photographs.

In a word, these books are readable interpretations of America written in journalese, yet better founded geographically than similar books in English.

W. G. E.

STEPPING STONES FROM ALASKA TO ASIA. By ISOBEL WYLIE HUTCHISON. *London: Blackie & Son,* 1937. $8\frac{1}{2} \times 5\frac{1}{2}$ *inches;* x+246 *pages; illustrations and maps.* 12*s* 6*d*

The difficulties to be overcome before any one can explore the Aleutian Islands become obvious as one reads this account of a journey undertaken to collect plants for the British Museum. No ordinary passenger boats visit the islands and other boats are few; their schedules are limited, and marooning is very possible. The author's luck held however, and the generous assistance of the United States Coast Guard service and an exceptional summer combined to make possible an extended and successful journey.

The Aleutian Islands are the higher portions of a sunken ridge stretching between Alaska and Kamchatka, the eastern portion forming the long Alaska peninsula. Although practically treeless, they support a considerable flora, for which they are a possible bridge between Asia and America. They are chiefly visited for whales, herring, sea-otter; and the Pribilov Islands, some 220 miles to the north, are visited for the fur seals.

Unalaska, whence Chamisso described a number of species over a century ago, was the first objective, and was reached via Seward, on the Kenai peninsula, and the island of Kodiak, the old capital of Russian Alaska. Delay on Kodiak permitted a good examination of this island with its interesting Russian church and its "highway"; the effects on the plants of the eruption of Mount Katmai in 1912, which, although 110 miles away, caused darkness for two days and buried the northern half of the island under a foot of ash, are described.

After reaching Unalaska an opportunity to visit the protected Pribilov Islands was seized, although no definite means of return could be arranged. The botanical collection made on St. Paul is interesting since these islands are

situated at the southern limit of the ice which annually blocks the Bering Strait. An account of the seal fur industry is given. The seals annually travel far south but return to breed, and between 1799 and 1834 two million were killed, the slaughter continuing until approaching extinction caused the U.S. Government to protect them and limit the industry, whereby they are now nearly restored. The return journey was made in a coastguard cutter, which was diverted to pick up the author and take her on the cruise. Therefrom results an interesting account of the activities of that efficient service as well as an account of the journey and the islands visited. Of special note is the island Bogoslov, a submarine volcano which is said to have appeared at the surface in 1796 and to have changed its shape more than once since, being at the moment united to a second island which appeared alongside it in 1908. After visiting Atka and Amchitka, a hydrographic survey was made of the Aleutian trough which, lying to the south of the chain, varies between 2000 and 4000 fathoms in depth. The discovery of an uncharted reef within 50 fathoms of the surface caused delay for investigation, but a favourable break in the weather at the last moment permitted a landing to be made on Attu, the collection among other species of the rowan of Asiatic type (*Sorbus sambucifolia*), and an account of the inhabitants.

As one business of the patrol is to prevent illicit fishing by Japanese, the hope of reaching Japan direct from Attu had disappeared, but the visit on the return journey to the high volcano of Kiska provided recompense in the form of interesting collections, and Japan was ultimately reached by way of Nome and Seattle. The account of the Trans-Siberian journey to the Urals concludes the book, except for an appendix of the ethnological objects acquired for the Royal Scottish Museum, Edinburgh, and another containing the list of the botanical collections, determined by Dr. Eric Hulten of Lund.

The book is very readable, as the author has the gift of vivid description, a lively imagination and whimsical humour. The photographs and impressionist colour sketches, also occasional poems, all combine to produce an excellent account of a little-known part of the globe, not only of its flowers but also of its people, the vanishing Aleut race, who two hundred years ago were in the Stone Age.

A. J. W.

CENTRAL AND SOUTH AMERICA

JOURNAL OF A CRUISE TO THE PACIFIC OCEAN, 1842–1844, in the frigate *United States;* with notes on Herman Melville. Edited by CHARLES ROBERTS ANDERSON. *Durham, North Carolina: Duke University Press* [*Great Britain: Cambridge University Press*], 1937. 9×5½ *inches;* vi+144 *pages; illustrations.* 11*s* 6*d*

This slender volume should be of some interest not only to students of literature, but to naval historians, and to all concerned with Central America and the relations of the U.S.A. to Mexico. The journal, from the Archives of the Navy Department in Washington, is anonymous; its author sailed in the flagship of the Pacific Squadron. They left Hampton Roads, Virginia, on 9 January 1842 for Madeira, thence to Rio and round the Horn to Valparaiso and Callão. Here there were rumours of war between the U.S.A. and Mexico, and the behaviour of an English squadron confirmed the American commander in his suspicions of the sale of California by Mexico to England. On 18 October 1842 therefore he sailed into Monterey under English colours, seized a Mexican ship, parleyed with the Mexican representatives, and finally hoisted the American flag over the fort. The day following the rumours proved to be baseless, and

Monterey was restored to Mexico: "our air-castle building wafted away by the smoke of our own salutes of triumph (of Mexican powder which had to be returned)." Fearing his recall, the commander took his squadron over to the Pacific islands. At Honolulu, in August 1843, Herman Melville was taken on as an ordinary seaman. His experiences, which formed the basis of "White-Jacket; or The World In a Man-Of-War," may be profitably compared with the simpler narrative of this journal, and its artless descriptions of life afloat and in the ports of Central America. It has been carefully edited and provided with a few well-chosen illustrations. J. P. H. M.

MOSQUITO COAST: an account of a journey through the jungles of Honduras. By PETER KEENAGH. *London: Chatto and Windus*, 1937. $8\frac{1}{2} \times 5\frac{1}{2}$ *inches;* xii + 286 *pages; illustrations and route-map.* 12*s* 6*d*

Any one thinking, from its title, that this book is concerned with the long littoral known to history as the Mosquito Coast of Central America, will be disappointed. Most of that once-famous region of escaped slaves, buccaneers and native "King," comprising in its heyday the Caribbean coast of Nicaragua from Greytown to the Wanks river, and beyond to Cape Cameron, is outside the scope of Mr. Keenagh.

He was concerned with a small part of the Province of Mosquitia, in Honduras Republic, and his book is a pleasantly written account of a partial ascent of the Patuca river, reached from Brewer's Lagoon, with a return to the coast by way of the Caratasca Lagoon. Several weeks were spent in Tegucigalpa, reached by three days' road travel from Puerto Cortés (the Pan-American Airways perform the same journey in two hours), in order to get an official permit to visit Mosquitia, where "one is not allowed to go without some plausible excuse," since it is "impossible to police" and is the refuge of "all the bandits of Central America." The region, says Mr. Keenagh, is "infinitely remote," and unknown to most Hondurans, Brewer's Lagoon giving an impression of "lost desertion." The experience of the present reviewer, a few years ago, seems unworthy of such a sinister place. In a motor launch we set out from Punta Castilla, ran in an hour or two to Brewer's Lagoon, shot wild duck, and gathered tree oysters, threaded Tom-Tom creek and a few miles of the Patuca, returning as we came without permits or interference. The lagoon is not unlike a fine Norfolk Broad, green with patches of water-plants and alive with wild fowl. Mr. Keenagh says that it lies along the north coast "some two hundred miles of water"; actually, it is about 18 miles long by 7 to 9 miles wide; average draught over the bar, 3 to 4 feet. Similar mistakes as to distance occur in other pages, as when the author reckons 100 miles along the Patuca from the sea to the junction with the Tom-Tom cut-off; it is actually about 15 miles. Mr. Keenagh and his companion hired a schooner, but in the lagoon transferred themselves, baggage, and local crew, to small craft, three "pipantos" (pitpans?) and two cayucas, to traverse Tom-Tom creek and proceed up the Patuca. Eventually they returned to the coast without boats or equipment, experience never teaching them that, in rivers broken with rapids, essential articles should be securely fastened in waterproof wrappings to the sides of the dug-outs.

No explicit notes are given as to dates, periods, or mileage; but after some weeks of up-river progress Mr. Keenagh and Mr. MacDermott found themselves alone, with one boat and diminished stores. They continued, visiting various native groups (among them a tribe of Payas, whose language is said to be "vowel-less" and "incomprehensible"), until the river narrowed, soon after the entrance of a tributary, becoming too shallow even for a cayuca. It was studded with large rocks "in the form of a gradual waterfall." They had reached,

says the author, the junction with the "Wampu" (Guampu), and the highest navigable point of the Patuca. So they went, on foot, some miles northward towards mountains which Mr. Keenagh calls the Colon range, where they visited native folk, "Vicentinos," presently returning to the Wampu. Thence they paddled and drifted down-stream again to Brauvila, where supplies awaited them; found a creek running southward, followed it, and, after a short portage, joined the Guarunta river and descended to its entry into Caratasca Lagoon.

Mr. Keenagh may or may not have reached the Wampu river; it seems likely that he did not, and that he mistook a bend in the Patuca for the Wampu and a rocky creek for the headwaters of the Patuca. In any case, he was certainly in error with regard to the hills found north of the river; for the Colon mountains lie south of the Patuca. He was also certainly nowhere near the "headwaters" of the Patuca. The Wampu junction is no more than 75 miles, roughly, from Tom-Tom creek, and Mr. Keenagh would have had to go at least three times as far to find the two rivers, Jalan and Guayape, which unite to form the Patuca. The head of navigation is not found until the Guayape narrows in the vicinity of the pleasant town of Jutigalpa in Olancho Province, some 250 miles from the Caribbean. The region is not, in fact, so desolate as Mr. Keenagh thought.

The spelling of names in Mr. Keenagh's pages is frequently incorrect; the sketch-map cannot be accepted; while the author's knowledge of natural history may be measured by his description of "tarantulas waving their fanged tails over their backs." L. E. J.

AUSTRALASIA AND PACIFIC

RELIGION AND SOCIAL ORGANIZATION IN CENTRAL POLYNESIA. By ROBERT W. WILLIAMSON. Edited by RALPH PIDDINGTON. *Cambridge: University Press*, 1937. $9\frac{1}{2} \times 6\frac{1}{2}$ *inches;* xxx+340 *pages.* 25*s*

Mr. R. W. Williamson on his death in 1932 left a mass of manuscripts on Central Polynesian ceremonial, religion, and other phases of Polynesian ethnology, which his executors in 1935 entrusted to Dr. Ralph Piddington to edit under the general supervision of Dr. Raymond Firth. The information given by the authors consulted by Williamson was collected before 1914 and thus could not represent the present state of our knowledge. So much field work has been done since that date that Dr. Piddington had to supplement the manuscripts by incorporating the recent material and this he has done in a skilful manner. A further comparative study, envisaged by Williamson, of an integrative type, taking in traditional material and social institutions and considering their relevance to the problems of Polynesian history, is in preparation.

Mr. Williamson wrote two erudite and critical works on Central Polynesian ethnology: 'The social and political systems of Central Polynesia,' 3 vols. 1923, and 'Religious and cosmic beliefs of Central Polynesia,' 2 vols.1933. The book under review, which is complementary to the last work, is divided into two parts: Part I, "Gods and worship," pp. 1–186, and Part II, "The place of religion in the cultures of Central Polynesia," pp. 187–336. The first part deals with the creation and the gods, major Polynesian deities, island gods, the worship of the gods, taboo, temples and burial places, and sacred objects. The information for these chapters was in the main obtained from Williamson's previous books and carries on his method and careful documentation. Here we have what may be termed the geographical distribution of the gods and of the customs, sacred spots, and objects related to them.

The second part of the book is largely based on investigations made since

Williamson's death and the treatment of the older and more recent information is on the lines of what is termed "functional anthropology"; in this Dr. Piddington follows Professor Malinowski. This part therefore cannot be regarded as expressing views held by Williamson. The relation between religion and magic has been variously formulated by different students: Piddington regards religion as that which validates the supernatural and maintains it, and magic as that which uses the supernatural for practical ends, whether by appeal to the power of the gods or by formulae and acts believed to be self-sufficient. Firth remarks that this is a definitely novel idea in anthropology which deserves further exploration. It is well known that magico-religious ideas and practices permeate the whole material and social life of primitive peoples and Piddington demonstrates the complementary nature of magico-religious beliefs and ritual on the one hand and practical knowledge and techniques on the other. He also indicates the part played by religion in social organization, which is especially prominent in political organization.

This book is the only survey of Polynesian religion and its function in everyday life that has yet been written, and it will prove invaluable not only to students of Polynesian ethnology but also to all those who are interested in comparative religion and the function of religion in the secular world. A. C. H.

THE BLACK MUSKETEERS: the work and adventures of a scientist on a South Sea island at war and in peace. By A. J. MARSHALL. *London: William Heinemann*, 1937. 9×5½ *inches;* xiv+330 *pages; illustrations and map.* 15*s*

This is a travel book of an unusual kind. The author, with infectious enthusiasm, sets out both to amuse and instruct. Every now and then the reader receives a little explanatory homily on some scientific subject, and these asides from the narrative are on the whole well done. The story of the author's adventures in the savage Western Pacific is told with humour and originality, and with only occasional lapses into a semi-poetic style. There is a refreshing absence of exaggeration: the story is true and it is an interesting one. Mr. Marshall is sympathetic in his account of the natives, but one cannot expect in a "White Australian" such capacity for merging one's personality with that of the Melanesian as was shown in Tom Harrisson's 'Savage civilization.' One gets a picture of the New Hebridean from a slightly withdrawn point of view; but it is clear that the native would get a fair deal if Mr. Marshall were appointed dictator there. The book is profusely and well illustrated. J. R. B.

POLAR REGIONS

THE ARCTIC WHALERS. By BASIL LUBBOCK. *Glasgow: Brown, Son and Ferguson*, 1937. 10×7 *inches;* xii+484 *pages; illustrations and sketch-map.* 25*s*

Mr. Lubbock has produced a stout volume full of information, describing the course of arctic whaling from the initiation of the Spitsbergen fishery early in the seventeenth century almost year by year down to its virtual abandonment, by old style methods, in 1909. The collection of such a wealth of detailed information has clearly been a labour of love; and it is a pity that, though the information itself is of great interest, the book as a whole is not.

The bulk of the volume suggests a book of reference, and such it is if information is sought about an individual ship, a British whaling captain, or the fishing results of any particular year. But the index contains nothing beyond a list of men and ships so that reference to places and events becomes impossible. If on the other hand the reader does not treat 'The Arctic whalers' as a text-book,

but starts at the beginning, he will be put on his guard by the opening paragraph. The writing savours of the daily press and the veracity of later statements is therefore suspect from the start, but the book is prevented by the superabundance of detail and a lack of continuity of thought, from being a racy narrative that might grip the imagination.

As to minor points, the spelling of certain words is in conflict with modern usage. A glossary is provided, presumably to enlighten the reader on difficult points. To tell him that a "Dovkie" is "A lesser guillemot" hardly advances his knowledge; while the statement that "Whale Fisher's Bight" is "A deep bight in the Greenland ice about midway between Jan Mayen and Cherie Islands . . ." is not helpful if the reader is equipped with a modern atlas and Mr. Lubbock's index. The attempted separation of the Greenland Right Whale into two species, the Greenland and the Right on pp. 31 and 71 is (in the absence of any explanatory note) more calculated to confuse than edify. Ornithologists will prefer to avoid pp. 35 and 36.

But the author is undoubtedly to be thanked for the great efforts that must have been made to produce this compilation of historical facts filling nearly 500 pages. G. C. L. B.

PHYSICAL AND BIOLOGICAL GEOGRAPHY

AN INTRODUCTION TO HISTORICAL GEOLOGY. By WILLIAM J. MILLER. *New York: D. Van Nostrand Co.* [*London: Chapman & Hall*], 1937 (4th edition). $9\frac{1}{2} \times 6$ *inches;* xii + 500 *pages; illustrations and maps.* 15*s*

The fourth edition of Miller's 'Introduction to physical geology' appeared a year ago. The companion 'Historical geology' has just undergone corresponding revision, suggesting that after twenty years the twin volumes still continue to fulfill their purpose adequately. It is only to be expected that of the two, both written professedly with the American undergraduate in mind, the one dealing with the historical side of the subject will be of less value to students elsewhere. In comparing the book with previous editions it is interesting to see how the treatment shows the growing tendency to cater for the numbers of students who elect geology as their "science requirement" when taking a degree in liberal arts. The subject has a very definite cultural value, and the number of expert amateurs who give their support to geological and natural history societies is proof of the strength of its appeal.

Accordingly, after eight chapters dealing with the general subjects of fossils, geological time and cosmogeny, and with the pre-Cambrian stages of Earth history, Miller divides the stratigraphic column into four major units—Earlier Palaeozoic, Later Palaeozoic, Mesozoic and Kainozoic—and discusses under each the characteristics of its subdivisions, before giving a survey of the life of that entire unit. The result is a more coherent picture of evolutionary development than if the fauna of each period were treated as entirely distinct from that of the next. Discussion of faunal classification and evolution is relegated to an Appendix with a briefly annotated bibliography, which allows the reader to discover where to turn for further information on any phase of the subject that arouses his interest.

The book is copiously illustrated, but here there is room for improvement in the next edition. Many of the half-tone blocks have "muddy" skies, others are poorly screened, while some of the fossils suffer from being grouped with "mixed lighting" so that the effect of relief is decreased. There is a similar lack of uniformity in finish of many of the diagrams. A map of the physical divisions of North America appears without explanation in the section entitled "Was the

Earth once molten?" and some of the other illustrations do not exemplify the features they represent clearly enough to be self-explanatory to a beginner. But these are relatively minor defects in a very serviceable elementary text-book. G. B. B.

ECONOMIC AND HISTORICAL GEOGRAPHY

PROFESSOR DAVID; the life of Sir Edgeworth David. By M. EDGEWORTH DAVID. *London: Edward Arnold*, 1937. 9×6 *inches; 320 pages; illustrations and sketch-map.* 12*s* 6*d*

To the world outside Australia, Tannatt William Edgeworth David is best known for the part he played in the Shackleton Antarctic Expedition 1907–09, and for his contributions to glaciology and to the geology of Australia. That his participation in polar exploration was no mere accident the record of his life shows. Before ever he went to Australia he had written his first paper on the evidence of glacial action in Wales. As early as 1895 he contributed a notable paper on polar research. About that time he was building snow igloos on Mount Kosciusko, though neither there nor later in Antarctica did he ever master the problem of building the domed roof. After the expedition the Antarctic coloured most of his thoughts and provided most of his similes. To the end of his life he was chasing glacial deposits in Australia and in his spare time indulging in speculations about the cause of Ice Ages.

David, joining the Shackleton Expedition, turned it from a simple adventure into a scientific venture. Most of his scientific colleagues had zeal, some had experience, some possessed the right temperament for their work, but no single one of them combined all the best qualities of the scientific explorer as David did, while he had at any rate a sufficiency of physical strength. From the day of his arrival he made his presence felt. He contributed the first ascent of Mount Erebus and the discovery of the South Magnetic Pole to the geographical exploits of an expedition that would have been notable without them, but became magnificent when these side issues were added to a polar journey which constituted the greatest advance ever made by one party towards either Pole. When we returned to civilization he spared neither pains nor money in his contribution to that most difficult of all the scientific explorer's tasks, the publication of the scientific results. He was the supporter of every worth-while Antarctic effort and the mentor of every worthy Antarctic leader thereafter throughout his life.

In a review of his biography in a geographical periodical the reviewer naturally is tempted to concentrate upon David's geographical work and his contributions to polar science, and he is encouraged in that bias by their spectacular nature and success. But to his fellow citizens and to his intimates there are even more important aspects to his work and to his influence on the world in which he lived. He was a great teacher and he inspired a school of international outlook and reputation such as Australia has seldom seen. His nature was such that, wherever he touched them, he improved human relations, whether University, civic, national, or international. As a research worker he dealt faithfully with many other than polar matters. He made notable contributions to the economic welfare of his country through his survey of a portion of its coal resources. His own personal energy and drive were chiefly responsible for the successful conclusion of an investigation of the depths of a coral reef which much enhanced Australia's scientific reputation, more so indeed, perhaps, than was reasonable in comparison with other more important but less spectacular researches.

He was a trained scientist with the culture and learning provided by the back-

ground of a sound classical education. He retained a love of the classics throughout his life and that is perhaps one reason why what he said and wrote always carried all the weight that it should, perhaps sometimes even a little more. His biographer has had the wisdom and good sense to exploit to the full her subject's own talent for writing.

His daughter has collected together a series of anecdotes that are true and that illustrate every side of a many-facetted character and most of the incidents of a very full life. We see his efficient and self-less work in a dozen fields; his gentle courtesy to the disappointed and harassed Shirase; his championship of the suspect German scientists marooned in Australia in the later months of 1914; his kindness to and interest in children and animals; his never-failing support of his old students; his perfect relations with the self-styled "brutal soldiery" in the war; his easy way of entering into the interests of all and hurting the susceptibilities of none. In this book David lives again and the story of his life and the portrait of the man is as good a tonic as a distracted world could wish. R. E. P.

GENERAL

SMALL YACHT CRUISING. By FRANCIS B. COOKE. *London: Edward Arnold*, 1937. 9×5½ *inches; 272 pages; illustrations, diagrams and folding plans.* 15*s*

This, the latest of Mr. Cooke's sailing books, can be recommended as a sound summary of what the novice needs to know; and those also who have some experience of sailing may find in it many things that they do not already know, or have not properly appreciated. For the book is not a rehash of old stuff: it gives prominence to the latest developments in hull design, sails and gear, some of which in recent years have been revolutionary. Mr. Cooke always writes for the man who must do things inexpensively and who will inevitably spend more than he needs to if he relies solely on his own limited experience; and the twenty-nine chapters cover the whole range of topics connected with cruising in small sailing yachts, from buying a second-hand boat or building a new one, and managing her at sea, to the humouring of auxiliary engines, insurance, fitting-out, and some answers to the question, "Where can I keep a boat." On all these matters the author is broad-minded. His own preferences are founded on very varied experience, and he gives fair statements for and against the multitude of debatable principles and details which enter into that vessel of compromises, the cruising yacht. He writes in an easy and personal style which unobtrusively emphasizes the salient point and conveys information in a way that makes it stick in the mind; the reviewer has read few sailing books so successful in this respect. Eleven folding plates give the designs of six modern types of cruising boat ranging from 4 to 10 tons Thames measurement. Of these six designs only one is of earlier date than 1931. J. A. W.

THE MONTHLY RECORD

KING GEORGE THE SIXTH SOUND

The Council have received a letter from the Secretary of State for the Colonies conveying the gracious consent of His Majesty the King to the request made by the Leader of the British Graham Land Expedition that the great passage discovered by the Expedition between Alexander I Land and the western coast of Graham Land should bear the name of King George the Sixth Sound.

GEOLOGY OF MIMMS VALLEY, HERTFORDSHIRE

Although the remarkable system of swallow holes in the bed and along the banks of the Mimmshall brook and other head-streams of the river Colne north of Barnet has often been described, no connected account of the evolution of the valley has yet been given. This is attempted in an article on the geology of the Mimms valley in the *Proceedings of the Geologists' Association* (vol. 48, 1937, Pt. 3) by Dr. S. W. Wooldridge, who however points out that further work remains to be done. The area is anomalous in that the chalk beneath its covering of Tertiary clay comes nearer to the surface than is usual in the Thames valley in consequence of anticlinal warping along a N.E.–S.W. and possibly also a N.W.–S.E. line. Thus between South and North Mimms the chalk surface is at about 250 feet O.D. and beneath North Mimms Park and Ridge Hill is above 300 feet O.D., whereas along the same line of strike it drops to above 150 feet O.D. south of Hertford and Radlett.

The general level of the water-table in the same area (ignoring the local rise due to the swallow holes themselves) is from 150 to 175 feet—nearly 100 feet below the top of the chalk. Thus the area is one in which the sub-surface leakage of the drainage was inevitable as soon as the clay cover was broken. The circumstances leading to so extensive a breaching of the clay cover involved excavation, probably by glacially diverted drainage, of the Radlett-Mimms depression and the further lowering of both ends of this depression by normal stream erosion. The actual location of the terminal swallow holes was determined indirectly by a second and later glacial diversion of the Mimms stream.

Dr. Wooldridge points out that the water-table in this area stands abnormally high, and brings to light the interesting fact that, as proved by fluorescein tests, all the underground drainage flows north-eastward to the river Lea, that is to say, follows the pre-glacial direction of the valley. Actually the only water flowing north-westward along the post-glacial direction of the valley towards the river Colne is that which overflows from the lake which, at times of heavy rainfall, conceals the fine terminal series of swallow holes at Water End, North Mimms. This lake subsides very rapidly when the peak of the flood has passed, and the final disappearance of the water in the lake down the swallow holes is usually accompanied by gurglings which can be heard for a considerable distance. The effect of the very severe thunderstorm of the evening of 21 June 1936, when some 4 inches of rain fell in the district, is described and illustrated by photographs.

GLACIATION OF SIBERIA

In the *American Journal of Science* for November 1937 Mr. Paul D. Krynine discusses the "Pleistocene glaciation of Siberia" on the basis of investigations carried out by the Russians upon the general geology of the region. The Russian

results are of particular interest in disproving the general belief that Siberia escaped the heavy Pleistocene glaciation undergone by Europe and North America. With the exception of large driftless areas in Central Siberia, whose history is as yet uncertain, the whole of Siberia appears to have been totally glaciated as far south as the 61st and 62nd parallel. In contrast however with Europe and North America the Siberian glaciers moved in all directions from a multitude of relatively small ice centres rather than from a single huge one.

The subject is studied with reference to the three great natural provinces of Siberia differing in stratigraphy, structure, and geomorphology, namely, Western, Central, and Eastern Siberia. The Western Siberian lowland between the Urals and the Yenisei is blanketed by a thick mantle of Pleistocene sediments, and in the south a vast series of end moraines more than 200 feet thick leave little doubt about the continental glaciation of the area. The East Siberian Highland contains high mountain ranges full of evidence of glaciation, suggesting that in the north the glaciers were of the continental type and in the south more of an alpine character. The intermediate central plateau of Siberia between the Yenisei and Lena shows innumerable signs of ice action including erratics, scratched and striated pebbles, tills or boulder clays, polished and striated rock surfaces, long deep "finger" lakes and the presence of fossil ice or ice as a rock formation. These features are considered by many Russian geologists, led by Obruchev and Urvantsev, to be proof of a former continuous ice mantle, but a more cautious interpretation is advanced by Edelstein who regards some of these phenomena as "pseudoglacial," the result of river ice in this region of very severe winters. The nature of the fossil ice, which is an extraordinarily interesting feature of Central Siberia, is in particular the subject of controversy as to whether the ice beds are the actual remnants of Pleistocene glaciers covered by glaciofluvial sediments, or whether they are due to the recrystallization of large snow or firn fields which accumulated during the Pleistocene in non-glaciated valleys and were later buried by ordinary fluvial deposits.

The Russians appear to hold the view that the Pleistocene ice sheets were drained by northward-flowing rivers into an ice-free Arctic Ocean, but this is challenged on geological grounds by Dr. F. P. Shepard, who contributes a note to Mr. Krynine's paper. In any case the existence of an ice-free North Polar ocean during a period of excessive development of ice in the Northern Hemisphere is not easy to admit on climatological grounds, nor, indeed, is it necessary to assume it (as apparently some do) as a source of moisture for the elimination of the Siberian glaciers.

The original information in Russian is to be found in 'Geology and mineral resources of the North of the U.S.S.R. Vol. I—Geology: a symposium.'

THE HEADWATERS OF THE SOUTH NAHANNI RIVER, N.W.T.

In an article in the *Canadian Geographical Journal* for October 1937, Mr. H. Snyder gives some brief details of survey work around the headwaters of the South Nahanni River, a tributary of the Liard river. The party, some members of which flew in from Fort Simpson, established a base on a lake in the upper reaches of the river. Thence flights were made to the mountain range at its head, which, subject to confirmation by the Geographic Board of Canada, has provisionally been named the "Snyder Mountains." From the air, it was estimated that the summits exceed 11,500 feet, and a large icefield was seen to the west, 55 miles long and 25 to 35 miles in width, from which eleven glaciers descended. The features of the range are said to be the absence of talus slopes, and the numerous cliffs and rock pinnacles, indicating its relative youth. The surveyors had established a base and occupied a number of stations on the

outer summits, and it is proposed to complete the survey work in 1938. The writer is mainly interested in natural history, and records the presence of white mountain goats and the "Barren Lands" grizzly in this area, beyond the range previously assigned to them. The article is illustrated by a number of photographs taken from the air.

BASALTIC BARRIERS OF WESTERN VICTORIA

The unusual surface features of the "Stony Rises" area, south-west and south-east of Lake Corangamite, Western Victoria, are described by Messrs. E. W. Skeats and A. V. G. James in the *Proceedings* of the Royal Society of Victoria, vol. 49, pt. ii. This area is volcanic, and the surface of the basalts, characterized by barriers and valleys, basins, and knolls, has been likened to a petrified sea. The polygonal jointing of the basalts allows the rainfall to sink through to the underlying sediments, so that there is no flowing surface stream in the area. The depressions, partially filled by basaltic soil, become small lakes or swamps in wet weather. The barriers and depressions are due not to erosion but to the sagging of the basalt sheets. The barriers, attaining a maximum height of 65 feet, are all more or less breached, owing to the collapse of the top. Some of these breaches resemble minute *graben*. The writers suggest that the cause of this surface topography is the partial collapse of the solid crust, following the withdrawal of molten basalt from beneath through breaches in the front of the basalt sheet. The result of this process, in addition to the subsidence of the surface in the rear, is the formation of a series of plateaus at slightly lower levels. In the area of subsidence, the position of the elevated portions may be due to the greater thickness of the basalt crust or to irregularities in the underlying topography. Near Mount Porndon is a symmetrical ring of basalt blocks raised about 10 feet above the surrounding surface. This appears to be due to the formation and collapse of a large gas blister. Mount Porndon is surrounded by a lava ring barrier about 2 miles in diameter and with a maximum height of 84 feet, the interior being occupied by lava plains, deep depressions, and low scoria cones. It is suggested that this feature was formed by two eruptions of lava, followed by a withdrawal of the molten lava below.

At Byaduk, about 100 miles farther west, there is another basalt area of somewhat similar character. An additional feature is the presence of a number of caves and tunnels. In the Harman valley these appear to be the result of the great quantities of steam formed by the thick lava flow overwhelming the original stream. The lack of subsequent erosion and the freshness of the basalt suggest that the volcanic activity in the areas described occurred within geologically recent times.

GEOGRAPHICAL RESULTS OF THE SECOND BYRD ANTARCTIC EXPEDITION

The *Geographical Review* for October 1937 published three contributions towards the geographical results of the Second Byrd Antarctic Expedition, namely—"The submarine topography of the Ross Sea and adjacent waters," by S. Edward Ross; "Glaciological studies in King Edward VII Land—N.W. Marie Byrd Land," by F. Alton Wade; and "The Thorne Glacier section of the Queen Maud Mountains," by Quin A. Blackburn.

The oceanographic programme, which included a systematic bathymetric survey by echo sounding, was divided into two parts, one series relative to the Pacific, the other to the Antarctic. Mr. Ross deals with the latter series. Generally speaking soundings were taken at 7-mile intervals, but were increased in number when a detailed profile of the bottom was required. The first section

dealt with is the area south of New Zealand, which was crossed four times by the *Bear of Oakland*. Here the bottom contours have an east–west trend, rising to a conspicuous ridge in 69° S., which separates the Antarctic Basin from the Southern Pacific Basin, the latter continuing far to the south-west to Macquarie Island. North of this dividing ridge the contours remain deeper than 5000 metres for some 300 miles, whilst on the southern side the depth increases again except in the vicinity of Scott Island, where the floor rises steeply from 3800 metres in a distance of 12 miles to 175 metres above sea-level.

A new ridge discovered 200 miles south of Scott Island is important in making possible a structural connection between New Zealand and west Antarctica, by way of the Pennell Bank, the Iselin Bank (the newly discovered bank), Scott Island, and Macquarie Island. Deep water gaps exist just as they do in the comparable Scotia Arc, and many more soundings are needed before conclusions can be drawn. Specimens obtained by dredging on the Pennell Bank seem to strengthen Griffith Taylor's suggestion that this bank represents a vast terminal moraine of the maximum glaciation.

It would appear from a line of soundings run along the face of the Ross Shelf Ice that for a considerable distance the depth is 600–750 metres, the lowest recorded depth being 352 metres, in a locality where the shelf ice was 80 metres above mean sea-level. It seems unlikely, therefore, considering the buoyancy of the ice, that the edge of the shelf is aground. Soundings in the Bay of Whales corroborated this.

Work in the north-eastern sector of the Ross Sea showed a ridge running north-westerly from Cape Colbeck, as if the Alexandra Mountains were continued beneath the surface of the sea. East of Cape Colbeck the existing isobaths indicated a broad continental shelf, but soundings, both by the *Bear of Oakland* and by the *Thorshavn*, of over 3700 metres in latitudes 75° and 72° suggest that the land in this region lies much farther to the south than hitherto suspected.

One of the main problems that concerned Alton Wade and his party was whether King Edward VII Land was insular or peninsular. Both the eastern and western shores are characterized by crevassed and steep slopes. Concerning the plateau itself it would appear that it is continuous with the Rockefeller Mountains, since the tractor party when crossing the intervening area, just behind the Alexandra Mountains, proved by seismic soundings that there was 2100 feet of ice in a locality where the general surface level was 3200 feet above M.S.L. Ellsworth in his Trans-Antarctic flight also noticed that there was no abrupt change between the high land of King Edward VII Land and the Rockefeller Mountains.

The area between the Edsel Ford Range and the Alexandra Mountains offered an opportunity for the study of a moderate-sized area of shelf ice. The eastern edge was studied by sledge, and the whole area observed and photographed from the air. The shore line was distinctly marked by the change of slope, tension cracks in the slopes being significant. The surface of this mass of ice slopes from the feet of Mount Grace McKinley, where it stands at 2400 feet, down to less than 100 feet at its seaward edge.

The surface features of the shelf ice were much the same as those observed in the Ross Shelf Ice and on the Rockefeller Plateau. In the shelf ice itself there were numerous ice-capped islands which, although crevassed, presented no sharp break in the surface. The author puts forward an interesting theory of the rôle which island ice plays in the early stages of the formation of shelf ice.

From a preliminary study of the Edsel Ford Range it seems that it resembles more nearly the Graham Land region of Antarctica, and the solution of this

problem of geological and physiographical relationships awaits more field work in the region and in Hearst and James W. Ellsworth Lands. The party concentrated therefore on the glaciology of the region.

The main object of Blackburn's journey was to continue the reconnaissance of the Queen Maud Mountains beyond the western limit of Gould's survey in 1928–30. Having reached Gould's "Supporting Party Mountain" they hoped to continue east up Leverett Glacier and then south into the interior if opportunity offered. This proved impossible, and the party concentrated on Thorne Glacier which headed back into less snow-covered ranges and a more promising route into the interior. They were able to travel as far south as Mount Weaver in 86° 57′ S., 152° 20′ W., and on their way studied the glaciology and physiography of the country on the eastern side of the glacier. For two-thirds of the length of the glacier the pressure phenomena were of great interest, the whole glacier being a longitudinal maze of great open pits and chasms, rolls and seracs.

Sedimentary rocks were found on Mount Jessie O'Keefe, and again on Mount Weaver. In the latter place there were nearly 2000 feet of sediments consisting of shales, sandstones, and coal, the latter varying from a few inches in depth to 10 feet. The beds were heavily plant-bearing and numerous fossil trees up to 18 inches in diameter were found. Fine-grained green igneous rocks topped the sediments. To the south of Mount Weaver, except for a few nunataks, there was no visible rock exposure, and the glacier merged into the main plateau.

Gould described the topographical representation of the Queen Maud Mountains as being in accord with its relatively simple geological structure. Scott's and Shackleton's expeditions described the relationship of structure and age of the mountains from Cape Adare to Beardmore Glacier, and Gould began within 100 miles of their eastern limit, finding the structure of the Queen Maud Mountains an exact duplicate of South Victoria Land. The same relationship was noticed by Blackburn's party—namely, highly folded Pre-Cambrian basement rocks, on top of which are thousands of feet of younger granite which support 2000 feet of sedimentary rocks. The elevated position, at some 9000 feet, and undisturbed state of the sedimentary rocks suggest that the tabular mountains are eroded remnants of a great horst, with a relative vertical displacement of 10,000 feet.

The sediments are correlative to the Beacon-sandstone series of South Victoria Land, which has been described as ranging from Devonian to Permo-carboniferous. The evidence studied by this party definitely supports the suggestion that the great outlet glaciers occupy the positions of transverse faults athwart the horst.

There is only slight and inconclusive evidence on the relationship of the Queen Maud Mountains to Edsel Ford Range. Indications of a connection of high land between the two is supported by the fact that great pressure from westward-moving glaciers is necessary to produce the pressure phenomena that exist in the shelf ice in this area. There is also evidence of strong winds from the east, such as would descend from a plateau in this region. A. S.

BRITISH TRANS-GREENLAND EXPEDITION, 1934: ALTITUDES

In 1934 the British Trans-Greenland Expedition fixed the altitude of the summit of the Watkins Mountains for the first time from the ground. Using trigonometrical intersections from two stations on the ice-cap (the altitude of which had been determined by aneroid) an altitude of 13,100 feet, a mean of 13,180 feet and 13,030 feet, was found (*Geogr. J.* 86 (1935) 237). On the other

hand a rough air survey by Knud Rasmussen's 7th Thule Expedition in 1933 had given 12,200 feet (*Geogr. J.* 86 (1935) 39) and 12,140 feet (*Geogr. J.* 88 (1936) 206). In 1935 A. Courtauld and L. R. Wager obtained from barometrical and hypsometrical measurements during their climb of the mountain the identical values of 12,200 feet (*Geogr. J.* 88 (1936) 206). We may thus take this value as very nearly correct. The difference of 900 feet against the British Trans-Greenland Expedition seems big, and might be attributed to an error in the altitude of the barometrically fixed stations of the ice-cap. Dr. Brooks and Dr. Loewe however are of the opinion that these barometrical heights are minimum values and cannot explain the difference (*Geogr. J.* 86 (1935) 238, 241). Probably the difference is due to the abnormally high refraction over the ice-cap caused by the prevailing temperature inversion above. The altitudes of the British Trans-Greenland Expedition were computed with a refraction coefficient of 0·07 (*Geogr. J.* 86 (1935) 236), a mean value "if nothing is known of the refraction." The true coefficient is probably considerably higher. Taking the altitude of 12,200 feet and the barometrical heights of the stations of the British Trans-Greenland Expedition as correct we would get a coefficient of refraction as high as about 0·30, four times the ordinary value (0·34 at station 5 and 0·26 at station 7). The refraction values derived from the numerous sights taken from the ice-cap towards the coastal mountains by the "Deutsche Grönlandexpedition Alfred Wegener" are not yet published. J. P. Koch made an extensive study of terrestrial refraction in East Greenland (Medd. om Grønland, 46, pp. 147–98). He found that with sights over the sea ice the mean coefficient was four times as big as the ordinary one (p. 164; p. 197). Thus with the marked inversion of temperature prevailing over the ice-cap a coefficient of refraction as high as 0·3 seems quite possible, giving the true altitude for the summit of the Watkins Mountains.

It would therefore appear that there is no reason to question the approximate accuracy of the 54 fixed stations, the probable error of any one height being estimated by Dr. Brooks to be "of the order of 100 feet" (*Geogr. J.* 86 (1935) 239). But the computed heights of the 27 intersected points, as shown on the Expedition's map published in the *Journal* for September 1935, are in each case about 6·5 per cent. too high. M. L.

OXFORD UNIVERSITY EXPLORATION CLUB

The ninth Annual Report of the Club (1936–37) deals principally with the work of the North-East Land Expedition (1935–36) led by A. R. Glen, and with the Greenland Expedition (1936) led by P. G. Mott. Accounts of these expeditions have lately appeared in this *Journal*. Reports are also included of the Faroes Biological Expedition 1937, consisting of H. G. Vevers and F. C. Evans, who have just returned to this country after a successful visit to the islands; and of the investigations by C. G. Hartley and M. J. Dunbar, who spent the summer of 1936 in West Greenland, working on the distribution of plankton in Disko Bay and the abnormal hydrographic conditions in bird-feeding zones at glacier faces. The Report describes field work carried out by members of the Club during 1937 in Labrador, Newfoundland, Ellesmere Land, and Greenland. It also outlines the plans for 1938: further investigations south of Strömfjord, a small expedition to winter in Labrador, and the possibility of a biological expedition to the Cayman Islands. At home the Club continues to flourish and extend its membership. Two volumes of collected papers, part of the results of the British Guiana (1929) and Sarawak (Borneo) Expeditions (1932), are ready for press.

GEOGRAPHICAL BIBLIOGRAPHIES

The *Bibliographie Géographique Internationale* for 1936 has now been published and will shortly be distributed by the Society. The scope of this work and the conditions of the Society's co-operation in its production have been already explained (*Geogr. J.* 85 (1935) 109; 89 (1937) 190). The price of this volume to subscribers in the British Isles and the Dominions has been fixed at ten shillings post free. Orders should be sent to the Office of the Society as soon as possible. The present volume contains a biographical sketch of M. Louis Raveneau, who died last year. He had been intimately connected with the *Bibliographie* during its life of forty-six years, first as editor and later as a contributor.

Number fifty-eight of the supplements to the *Geographical Journal*, containing a list of recent geographical literature, maps, and photographs added to the Society's collections, was issued in January. These lists, which are published three times a year, are sent free to Fellows on request. An Index to the first four volumes of these Supplements (Nos. 1–41) was recently published by the Society, the price to Fellows being twelve shillings and sixpence post free.

OBITUARY

MAJOR-GENERAL LORD EDWARD GLEICHEN

Major-General Lord Edward Gleichen had seen active service as an officer of the Grenadier Guards in the Nile expedition of 1885 to relieve Gordon in Khartoum, and in the South African War, when he was severely wounded at the battle of Modder River. In the Great War he had commanded a Brigade in Flanders and a Division on the Somme. While still a lieutenant he had served two years in the Intelligence Department and passed the Staff College. He was in Intelligence in Egypt in 1896 with Kitchener; was made Director of Intelligence at Cairo in 1903; was Assistant Director of Military Operations at the War Office in 1907–09; and organized the Intelligence Bureau of the Department of Information from October 1916. He accompanied the West Ridgeway Mission to Morocco in 1893, the Rodd Mission to Abyssinia in 1897, and the Lister Mission to Fez in 1909. He was Military Attaché at Berlin in 1903 and at Washington in 1905; and in the intervals of these employments he travelled in Russia, Persia, North Africa, Cuba, Mexico, and Canada.

His father's mother was a half-sister of Queen Victoria, and wife of Prince Ernest of Hohenlohe-Langenburg. Her son was brought up in England, served in the Navy, and became Admiral Prince Victor of Hohenlohe-Langenburg, who married Laura, daughter of Admiral of the Fleet Sir George Seymour; and until the renunciation of German titles in 1917 their only son bore the title Count Gleichen, and thereafter was Lord Edward Gleichen. In 1910 he married the Hon. Sylvia Edwardes, Maid of Honour to Queen Alexandra.

On retiring from the Army in 1919 Lord Edward turned his energy and great ability to a wide range of interests: to music—he was Chairman of the Bach Choir; to art—he wrote in 1928 an excellent book on London Open-air Statuary; to historical reminiscence in 'A Guardsman's memories,' with an admirable sketch of the author as a demon bowler at Sandhurst; to drama—he wrote the Ashdown Forest Pageant in 1931; and naturally to geography, whose military aspects he had studied all his life. He had been elected to our

Council in 1917; was a Vice-President from 1921 to 1928, and retired in 1934. After the war he was almost immediately concerned in the formation of the Permanent Committee on Geographical Names for British Official Use (the P.C.G.N.) which under his Chairmanship, and housed in the R.G.S. at Kensington Gore, has done so much to regularize the difficult matter of spelling foreign place names in British publications.

His last years were much troubled by illness, but at the Annual General Meeting in October last the President had spoken cheerfully of his restoration to comparative health. He was present with Lady Edward at Mr. Philby's Asia Lecture on November 15, and presided for the last time at a meeting of the P.C.G.N. nine days later. But the improvement was unhappily short, and he died after a brief final illness on the evening of December 14. On the following Friday his funeral service was in the Guards' Chapel, with the music of the Regimental Band and of the Children of the Chapel Royal, and with guard and bearers from the King's Company of Grenadiers.

GEORGE PHILIP

We record with much regret the death on December 8 last of Mr. George Philip, the chairman and general editor of the well-known firm of geographical publishers. Mr. Philip, who was born in 1870, was a grand-nephew of the George Philip who in 1834 founded the firm in Liverpool. After completing his education in Germany, he entered the business in 1897, becoming a director five years later. As general editor he was responsible for many of the geographical text-books, maps, and atlases published by his firm. He was also keenly interested in historical geography and the history of exploration. One of his merits as a cartographer was the care he took to secure the accurate transliteration of foreign place-names, and it was appropriate therefore that he should have served as a representative of our Society on the Permanent Committee of Geographical Names. He had been a life Fellow of the Society since 1891. His son, G. M. Philip, continues the family connection with the publishing house.

MRS. W. E. OATES

Mrs. W. E. Oates died at her residence, Gestingthorpe Hall in Essex, on 25 November 1937 at the age of eighty-three. She was the daughter of Mr. W. J. Buckton of Meanwood, Yorkshire, and married Mr. W. E. Oates, also a native of Yorkshire and famous as a traveller and big-game hunter: a summary of his contributions to exploration in parts of South Africa then very difficult of access was given in this *Journal* (7 (1896) 667) at the time of his death in 1896.

Her eldest son, Captain Laurence E. G. Oates of the Inniskilling Dragoons, a fine soldier who distinguished himself in the South African War, won still more enduring fame from the self-sacrifice with which, after he had accompanied Captain Scott to the South Pole, he walked out into the blizzard on the return journey in order to give his comrades a better chance of getting through alive. This was on 17 March 1912, his thirty-second birthday. The date was always kept sacred by his mother, and she never failed to remember the officers and men of his old regiment at their annual celebration of the day. Mrs. Oates was greatly touched by the memorials to her son in the different places with which he had been connected, and the establishment of a public school for English boys in the Argentine Republic under the name of Oates College, where

his name was revered like that of a patron, gave her much pleasure. She was one of the first people consulted by Commr. Murray-Levick when he was organizing the first of the Public Schools Exploration Expeditions, and she continued to take a warm interest in the scheme. She kept abreast of all polar exploration, and delighted in the conversation of young explorers from Cambridge who were planning expeditions or working up their results at the Scott Polar Research Institute.

WALTER J. CLUTTERBUCK

Mr. Walter J. Clutterbuck was born in 1853, and became a Fellow of the Society in 1890. He was an enthusiastic traveller, and was the author or joint author of books on Norway, Ceylon and Borneo, and the Arctic Seas. His great hobby was photography: he was a member of the London Salon of Photography, and his scenes from Japan, China, Kashmir, and many parts of Europe figured in many photographic exhibitions. His death took place at his home in Norfolk on 22 October 1937.

MEETINGS: SESSION 1937–38

Fifth Evening Meeting, 10 January 1938. The President in the Chair

Elections: Leonard Aldridge; John Anderson; Edward Richard Moulton-Barrett; Godfrey F. B. Clarke; Mrs. C. S. Cutting; Mrs. Gertrude Elizabeth Jack; Miss Thelma Eileen Jarrett; Francis William Lawrence; Angus Chambers Lyell; Captain John Desmond O'Neill, M.B., B.CH.; Mrs. Helen S. Prior; Percy Price Smith; Sir Samuel Findlater Stewart, G.C.I.E., K.C.B., C.S.I., LL.D.; William S. Watts

Paper: The Shaksgam Expedition of 1937. By Mr. Eric Shipton

Third Afternoon Meeting, 17 January 1938. The President in the Chair

Paper: Population changes in the colliery districts of Northumberland and Durham. By Mr. A. E. Smailes

Sixth Evening Meeting, 24 January 1938. The President in the Chair

Elections: J. Adderley; M. A. Anwer, B.A.; Cornelius Bagot; Mrs. Winifred Bain; Lewis Balfour; Philip Blenkinsop; Charles Alfred Bolton; A. J. Booth, M.B.E.; Mrs. Betty Bramhall; Miss A. R. Burgess; Sir Charles Carter Chitham, C.I.E.; Lieut. George Frederick Cole, R.N.R.; Austin Craig, B.L., A.M., LITT.D.; Miss Florence J. Davidson; Captain John Joseph Dillon, M.C., B.A., R.A.S.C.; Miss Elise Doucet; N. L. Elder, M.A.; Walter John Enright; Richard Nathaniel Twisleton-Wykeham-Fiennes; George Goodall, M.A.; Miss Frances Hotham; Miss Helen Inman; James William Jenkins; George R. Leah; Miss Eleanora J. MacLellan; Jesse Myers; E. Stanley Nicholas; The Reverend Nathan Noseworthy; James Edwin Orr; Richard Eric Rook; M. T. C. Sadler; James Francis Spink, LITT.D., PH.D.; J. C. G. Sugden; William Stark Toller, O.B.E.; Maung Tun Yin, B.A.; Miss Violet Rose Margaret Walker, B.A.; Miss Ida Marian Widlake, B.A.; Captain M. J. F. Wilson; Mrs. Eveline May Yeaman, F.Z.S.

Paper: Journeys in the Naga Hills, Assam. By Dr. Christoph von Fürer-Haimendorf